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# INTRODUCTION

# THE SOCIAL CONSEQUENCES OF TECHNICAL PROGRESS

GEORGES FRIEDMANN

It was only very late that the study of technical advances and of their consequences for man and society, for institutions and ways of living, was given its appropriate place in the forefront of sociology as a whole. The masters of French sociology can scarcely be said to have made it their chief concern; neither Durkheim nor Lévy-Bruhl devoted much of their work to it. While the ethnologists pointed the way in this field, their observations, however plentiful and valuable, have not made it unnecessary to study industrial societies, and the lessons to be learnt from the two studies are different. Is that because sociology has matured? Or is it simply because the influence of techniques has today become so strong that everyone must be aware of the urgency and extent of the problems it entails? In any case, there is no doubt that this branch of study has made tremendous strides, and that we are beginning to see the results of the labours that have been devoted to it.

We referred above to French sociology. But are we still entitled, especially in this branch, to make a distinction between national sociologies? One of the chief impressions gained on reading the contributions assembled here is that they relate to the same problems, use comparable methods of approach, and utilize common observations and concepts. There is of course no question of disregarding the different ways in which the problem is conditioned by national or regional circumstances, by history and institutions, by the stage of technical advancement reached, or by mentalities and habits; nor of giving an artificial or falsely eclectic unity to different lines of thought, different methods of study, or differences of emphasis on any given aspect of the problem. Yet there is no antagonism between the various forms of experience; they are comparable and interchangeable. There is no opposition between disciplines; they are distinct, yet complementary. The interpretations are not mutually destructive; they each contribute to a sum total from which we can form a general idea of the truly international problem of the social consequences of technical progress.

Does this mean that these studies and all others devoted to the same subject can properly be synthesized? One leitmotiv runs through all these articles, which, we should like to repeat for the benefit of French research workers: far too little research has as yet been done in this domain. For lack of resources, and also for lack of confidence, sociology is still too often restricted to the universities. Fortunate encounters or chance openings may afford a starting point for investigations, but neither the systematic inventories nor the experiments which could and should be made are made in fact. So that we may expect from sociology only provisional syntheses, a preliminary outline, an attempt to state the problems already known, those on which initial studies have been made, and those still untackled. It should be noted, however, that the approach is positive; nearly all the articles assembled here not only propose work plans and lines of study, but also—whilst following out a theoretical argumentation—are concerned with practical achievements.

In the first place, we must define our problem. There is general agreement on what is meant by technological progress. The invention of the electric motor was a step forward, as was the invention of penicillin. But it is perhaps worth making the point clearer. If by techniques we mean "clearly defined and transmissible processes intended to produce certain results thought useful",[1] it follows that a technique is a mean to an end that has been determined without reference to that technique. What then is "technical progress"? Clearly, it is the transformation of those means so as better to attain the ends to which they are subordinated. If we assume those ends to be determined, we can use the word "progress" in a clear and unequivocal sense. If the aim is, for example, to produce the maximum number of motor cars, we shall term progress any technical change leading to an increase in the output of motor cars with the same amount of labour. A similar line of reasoning may be applied to every branch of production, taken by itself. But as soon as we consider production as a whole—assuming that our aim is now to create an abundance of consumer goods—the problem becomes far more complex. It is obvious that there will be progress in so far as the most useful consumer goods are produced in larger quantity. In other words, to define progress, we should have to draw up an overall statement of production, taking account of the usefulness of each category of goods. Only through such a complex evaluation should we be able fully to define the word progress.

We have simplified the question by assuming that technology was to serve only a single aim. In reality, however, our communities have a large number of aims or, if it be preferred, values. We may quote in this connexion, Professor Lasswell's definition of technology as "the pattern of all the practices by which resources are utilized in the shaping of values". It is this multiplicity of values which makes the definition of progress infinitely more difficult, or rather, which renders valueless any single definition. We have no right to speak of technical progress until we have specified the criteria we propose to use and the values we intend to apply. Reverting to Professor Lasswell's examples do we mean wealth, power, rectitude or affection? According to which of these standpoints we adopt, the reply may differ, because the definition of technical progress will itself be different.

Our object in mentioning these definitions is not to present the problem from the moralist's point of view, nor to draw abstract comparisons between ends and means. The values referred to by both Professor Lasswell and ourselves have not been evolved by the philosopher or thinker alone. They are social realities, objectives for which the members of a society work, for which they invent, improve and apply techniques. Let us therefore avoid one pitfall from the beginning: the problem of techniques or of technology as a whole is not in itself a technical problem. It is a social problem, indeed, a human problem, and any attempt to interpret it from the purely technical standpoint is bound to disregard its essential aspects.

This point is worth stressing. For, while it was very soon realized how important were the changes that industrialized our society after the end of the eighteenth or the beginning of the nineteenth centuries, while industrial progress was amply eulogized and utopian philosophies and optimistic anticipation abounded, the great movement of ideas was very slow to express itself scientifically. This was not because the problems were overlooked, but because

[1] Lalande. *Vocabulaire historique et critique de la philosophie*, Paris, P.U.F., 5th ed., 1947, *sub verbo*.

they were simplified. That, for example, is why Saint-Simon's socialism remained a dream of philanthropic industrialists. Yet Saint-Simon had admirably understood the possibilities offered by industry and the central position it would occupy in the development of modern society. His analysis of the State, and of the relationships between institutions and customs and methods of production, was a foretaste of Marx.[1] As a result of this advance of industry, the former "military" society was inevitably superseded by an "industrial" society. Saint-Simon exalted the role of the producers, but his idea of the social and human factors in that role was still utterly confused. He wanted—not in so many words, but the formula adequately conveys his thought—"to substitute the administration of things for the government of persons". Since only the producers count, for they are the "bees", whilst the political leaders are merely the "drones", everything must be done "by industry and for industry". The best administrator is the industrialist, the head of an undertaking, the man who has been in business and active in economic life. Saint-Simon did not realize that the "administration of things" was inseparable from the "government of persons". However high he rated the virtues of association—which his disciples were to make into a creed—it never occurred to him that there might be conflicting interests and, going deeper, class warfare. He remained indifferent to purely political problems, because for him the social question did not exist. Civil power, "the sole foundation of political power", derived from industry and science, and its aim was in fact a kind of dictatorship of the industrialists and scientists. There are many other aspects of Saint-Simonism; but it is reasonable to see in it the first of the great technicist illusions—the belief that a technical solution can be found for every problem, from world peace to the organization of society: in short, the failure to think of the problem of technology and technical progress as a human problem.

Contemporary thought is far from having outgrown that belief. We would recall the movement which grew up in the United States between 1932 and 1935, led by Howard Scott and the "technocrats". That was simple "technicism", more or less in its primitive state. The idea was that physical science should be directly applied to solving social problems. Chaos in production and distribution, and the resultant social conflicts, were reduced to a simple technical problem to be solved by engineering methods, taking no account of the reform of institutions and structures. There is no need to labour the point, for the movement has already been judged by history. Burnham's thought, which also sprang briefly into fame some years ago, seems to suffer in the last resort from the same excessive simplification. There, the technicians, defined not as engineers relying on their knowledge of physico-chemical science, but as managers, brought to the fore by their administrative and financial ability, were thought of as forming an international class, enabled by their power and technical knowledge to solve the chief problems of our time.

Is it necessary to offer criticisms of these conceptions, too? Reflexion or analysis condemn these technicist simplifications, but so does the very fabric of our society. Precisely where technical organization seemed to be most strikingly successful, namely in the rationalization of work in the factory, Taylor's simplifications came up against "the human factor". Today, in contrast to Burnham's managers or Scott's technocrats, a great many factory technicians feel impelled to draw on the human sciences, and understand that techniques of production, administration and distribution can succeed

[1] G. Gurvitch. *La vocation actuelle de la sociologie*, Paris, P.U.F., 1950, pp. 588-602.

only if they make allowance for the human factors which the technicists tried to disregard. What is true of the factory is still more true of society as a whole. It must therefore be clearly stated that technology is incapable of solving the problems it creates.

We have had first to eliminate the major peril of "technicism" (which is more than likely to undergo many more changes, precisely on account of its over-simplification), by setting out the problem in general terms. Those must now be broken down or indeed corrected, for technical progress is bound to affect the values it serves. Professor Frankel has pointed out very rightly that technical change consists not merely in the modification of a branch of knowledge, but in a changed pattern of life and of the social structure as a whole. Changes in production processes involve changes in the social relationships of those engaged in production, and in that way affect every aspect of society. Strictly speaking, therefore, it is as impossible to isolate technical factors as to isolate values. Or rather, the sudden break in social evolution which would permit us to isolate them might well conceal the mainsprings of that evolution. So that we gladly agree with Professor Frankel that industrial revolutions are not purely industrial, but are part and parcel of a change in the whole social pattern, a change which proceeds much more slowly than does the seizure of power. It is set in motion by the alteration of production processes, and that alteration is bound to be both technical and human, since it affects the relationship between man and nature in all its aspects.

There could be no better example of the fact that we are dealing with a total, and not a partial process than that of the Australian aborigines studied by Professor Elkin. The first effect of a colonial minority's presence among the native communities was not to spread the newcomers' technical knowledge. The kind of knowledge that was easily disseminated was such as, without radically affecting the natives' way of life, led to some minor improvements in their implements. But was there any deep influence? Where there was, its result was not an improvement in the native way of life, but its collapse, parasitism, in fact. Once native society could no longer subsist on the old methods of production, it acquired only such new ones as it needed so as to live at the expense of the farmer or breeder, and it therefore perished. This economic dependence, which hampered the growth even of communities under white leadership, resulted in a decline in beliefs, in religious practices and in the essential elements of native culture. There was too great a gap between the two technical levels and the two ways of life, so that the outcome was collapse rather than evolution.

This approach enables us to eliminate a second error—the artificial and even rhetorical contrast between Technology and Values, a distinction which would consider technology as an independent factor, to be judged in the name of allegedly eternal values. Neither technology nor values are unaffected by the general social evolution of which they are the economic basis and the ideological interpretation. They evolve *pari passu*, and the assessment of technology in the light of values is itself a social fact and part of a phase in social evolution. Are we, then, condemned to a wholly negative relativism? Surely not, provided we refrain from transforming concepts into things, or the various aspects of the social pattern into separate entities. The problem of technical progress is the problem of the civilization to which it belongs, and that civilization consists simply of the position it affords the individual. If we are to assess the social impact of technical progress and to define both that progress and its significance, we must seek in the last resort to discover the nature of contemporary man's existence in a "technical" world and his

awareness of himself as a part of it. Thus it is not a question of expressing preferences or of forming judgments based on an established attitude, but of penetrating by means of an objective analysis to the very heart of our civilization, to the point where it acquires significance.

How can this be done? Professor Lasswell rightly considers that every conceivable method should be tried. It is of course necessary to distinguish between disciplines and between the terminology proper to each of the various human sciences. Describing phenomena in terms of psychological tensions and motivations is not the same thing as describing them in terms of social structure, and a switch over from one terminology to another is apt to lead to the utmost confusion; in the one case the main lines of the social pattern will be obscured by the introduction of individual situations, and in the other, the facts to be explained are liable to be reduced to wholly impersonal mechanisms. But, if our attitude is correct, it is even more important to insist on the inter-relationship, the underlying unity, of the various human sciences. The objective description of a situation must of necessity refer to its significance for those affected, but conversely, that significance depends on economic, social and political factors. Thus, definition moves in a circle, or rather there are various forms of approach to a central reality which governs everything, namely the position of the individual.

## EFFECTS OF PRODUCTION TECHNIQUES

Our first definition of techniques as "clearly defined and transmissible processes intended to produce certain results thought useful" possibly opened up too large a field of study. That definition would indeed cover techniques of education, techniques of social relations—such as certain forms of politeness —and also, as Mauss has shown, techniques of the body.[1] We cannot afford to overlook this wider sense of the word "techniques", which is essential to a complete, ethnological description of a society. Nevertheless, when we speak of "technical progress", we generally use the term in a narrower sense. Technology is then taken to mean "organized methods based on the relevant scientific knowledge" (Lalande). Indeed, in "industrial societies", that is its chief characteristic. Technology is no longer merely "know-how", routine or knack, but the application of scientific knowledge, and its progress is closely related to the progress of science, so that it is often difficult to know which is the more indebted to the other. Science is stimulated by technical needs and by the application of scientific discoveries, by technology, and it is the latter which measures their efficacy and accuracy. It is this general application of scientific discovery which largely explains the second principal characteristic of contemporary technology—the fact that for the most part it uses machines. Mechanization has made possible the tremendous extension and multiplication of technical processes, and brought about a revolutionary increase in the power of our communities.

The most important techniques are undoubtedly production techniques. Large-scale industry and its corollary, mass production, would in themselves have sufficed to change the aspect of our societies. In manufacturing plants and in tool-workshops, in technical planning departments and on the business side, industry uses a tremendous variety of techniques. Agriculture is gradually being mechanized. Tractors, reapers, threshers-and-binders, trussing-machines, harrows, machines for digging up potatoes or beetroots—all are combined

[1] M. Mauss. *Les techniques du corps*, reprinted in M. Mauss, *Sociologie et anthropologie*, Paris, P.U.F., 1950.

with the most varied portable machines, such as saws, pumps or mixers. Transport techniques based on steam, electricity or the combustion engine are becoming equally universal. Railways, steamships and aeroplanes have reduced travelling time to a twentieth or even a hundredth of what it was a century and a half ago. With the motor car, a man can travel about alone or with his family, choosing his own route, whilst urban transport facilities make it unnecessary for him to go even the shortest distance on foot. In the home, too, even in Europe, machines are coming into general use. Washing machines, refrigerators, mixers and mincers, vacuum cleaners, etc., are bringing about a radical change in the housewife's work. When to these we add the techniques of communication and leisure-time occupation, the telegraph, telephone, cinema, television, we see that this network of machines and mechanical aids has become an essential part of modern life. Both at work and at play, man's life has been profoundly changed. Few of his acts, and fewer still of his enterprises, are not directly or indirectly dependent on the use of a machine. Hence, an enquiry into the social consequences of technical progress in fact implies the study of almost every aspect of the changes which have occurred in contemporary society.

Among the most important results of technical progress are its effects on the individual at work. There are of course occupations which have undergone relatively little change. No revolution has taken place in the work of the small tradesman, the teacher or the lawyer. Broadly speaking, we might say, in the words of Professor Fourastié, that the tertiary sector of activity is the one least altered by mechanization. Yet could the same be said of doctors, for example, now that the problem of group medicine is under discussion and that the profession's technical instruments are becoming excessively important and costly? In any case, technical progress has turned the whole of industrial life upside-down. Its most important manifestation has been the division of labour. The invention and improvement of the steam engine enabled production to be concentrated so that extensive division of labour became worth while, thus immensely speeding up production and in turn giving a further impetus to the division of labour. We must beware of suggesting that the latter is a purely technical phenomenon, for a large number of other elements are probably also involved.[1] Nevertheless it was a technical factor that made it possible, and its technical aspect that finally imposed it. It therefore seems reasonable to recall some of its effects on the vocational life of the industrial worker.

As early as 1776, Adam Smith set out its most important characteristics. His well-known description of the division of labour in pin manufacturing[2] set the seal on the disappearance of the worker who could do a job from beginning to end. By breaking up jobs into partial operations and assigning one such operation to each worker, the division of labour has resulted in a further technical change, namely from the universal machine or general-purpose tool, whose value depends on its user's skill, to the specialized machine, performing only one operation and allowing its user much less initiative or even activity. The first consequence was the eclipse of the one-man trades. There are thousands of examples. The watch and clock-maker or repairer is swallowed up by the manufacturer of watches from component parts, who distributes the job among several dozen semi-skilled workers, each of whom knows only one piece and may not even know its purpose. In a gas meter factory we recently had occasion to visit, there were in 1914, according to the manager, 40 "tinsmiths, each of whom could do the whole or any part

[1] Cf. Warner and Low. *The Social System of the Modern Factory*, Newhaven, 1947, p. 190.
[2] *The Wealth of Nations*, Methuen's London, 1904, Vol. I, p. 61; cf. Vol. II, p. 267.

of the job and either make an entire new gas meter or repair an old one". Today, the factory employs 800 semi-skilled workers, each one doing his own limited task and to that extent incapable of equalling his predecessors. Consequently, as unitary jobs are replaced by fractional jobs, it is not surprising to find a general lowering of professional skill. Where formerly a highly trained artisan was required, who could do the entire job, supervise it and adjust his own tools, it now suffices to have a specialized workman, who merely "tends" a machine itself able to determine the main characteristics of the piece to be turned out. The change-over from a centre-lathe to an automatic lathe, for example, obviates the need for the greater part of a worker's professional skill. Formerly, he had to select his tools, decide how the cutting was to be done, set up the machine and the piece to be cut, check its size, adjust the screw cutting and feeding gear, etc. Today, all he has to do is to set up the pieces and measure their size.[1] Formerly, the important item in a rolling mill was the chief mill-hand's skill, his ability to tell at a glance how tightly to screw the clamping pins, just as the stoker could tell the temperature of a furnace and the pieces. Those skills were the fruits of long experience and practice. In a modern rolling mill, the temperature, the gap between the compression rollers, everything, is gauged by precision instruments.[2] Knowledge of the material becomes useless. Textile workers now need only a very slight knowledge of textile fibres and their varying reactions to conditions of heat and moisture. In the big bakeries and confectioners, the real old type of "master-baker", who knew what ingredients to use and could invent his own pastries is now only partially employed, supervising unskilled workers who have merely been "told what to do".

Thus what is now vanishing—and in many branches has already vanished—is the old professional structure, with its working methods, its habits and hierarchies. One of the less immediate results of the disappearance of special skills is the gradual disappearance of the trade guilds which long played so important a part in the life of the workers. As the number of the old skilled workers diminished, and their importance and prestige dwindled, the trade unions expanded and became more democratic. They were no longer the professional representatives of a minority, but became the much more militant and "radical" association of the majority of workers.

It is of course true that mechanization also eliminates much of what was formerly heavy labour. By reducing the muscular effort required and by giving the worker better protection against heat, fumes and the action of forces under his control, it has made work infinitely less hard than it used to be. Should we go further? Should we hope, like Professor Moore, that, by its very progress, mechanization will eliminate all fractional and automatic jobs, and that, the more those jobs are simplified and reduced to a few repetitive movements, they may themselves become the target for further mechanization? It is true that mechanization seems to be following a line similar to the division of labour. Now that the change has been made from the universal to the specialized machine, and the unitary jobs broken down, certain signs of regrouping are becoming visible. The specialized machine is only semi-automatic, and the workman has as it were to make up for its deficiencies. Certain automatic machines already exist, however, which perform a series of operations without human intervention. One of the first such machines

[1] Rousseau and Devillez. Report published by the Comité industriel belge de l'enseignement professionnel et technique, *Bulletin du comité central industriel*, Brussels, 18 April 1936.

[2] Monograph to be published in 1953 by our Assistant M. Verry. A preliminary account of the Enquiry of which the monograph is a part, has been published in the *Cahiers internationaux de sociologie*, Vol. VIII, 1949.

was the turret-lathe armed with various tools and able to perform some 10 to 20 different operations. The electro-mechanically controlled transfer machines used today by the Renault factories mark a step forward in the polyvalence of automatic machines. And through these automatic multi-purpose machines, technical progress tends to reconstitute unity of labour in a new form and at a new level.

For the present, these are only trends, and even if they prevailed, the old skills would still not be resurrected. Manual dexterity and experience would, without actually disappearing, lose their former importance. The job to be done would consist not so much of actual fabrication as of the control, feeding and maintenance of the machine. To professional knowledge proper would be added a foundation of much more general physical and mechanical knowledge, and a new kind of competence would be evolved—that of the technician. Thus, the highly skilled worker would be closer to the engineer than the former all-round artisan. Yet we must not be deceived into a kind of wishful thinking which would take the place of observation. Our visits to factories, study tours, or research in progress do not, or at least do not yet, indicate that automatic machines everywhere predominate, and we must be careful not to outrun events.

Nevertheless, the appearance of a "new artisanate" has been hailed even at the present stage of mechanization.[1] It is claimed that mass production, which uses mainly semi-skilled workers, has found new uses for the trained worker—the maintenance and repair of running equipment, the invention of new machinery, the working out of job schedules, the improvement of manufacturing processes, and the study of new models; none of these activities, which are assuming increased importance in industrial production, can be "mass" work, and they are alleged to provide new outlets for the trained artisan. If that is so, how can their poor showing in scattered cases of statistical sampling be explained? In 1926, J. Hirsch[2] pointed out that 85 per cent of Ford's workers were trained in less than two weeks. I myself noted similar figures at the end of 1948: 75 to 80 per cent of the workers were unskilled, while the Red River Training School at Detroit turned out 300 highly skilled workers a year, only half of whom went to Ford's. Observations made at the time in Western Electric's Archer Avenue Works in Chicago showed a percentage of skilled workers of 6-10. How can these facts be explained?

In the first place, genuine technical competence is absorbed to an increasing extent by the technical planning departments and their white collar workers. It is they who study the models and the working and manufacturing processes. Secondly, the work of the tool workshops remains highly skilled only if the tools are turned out on a small scale. When the machinery is mass-produced, there has to be the same division of labour as in the manufacturing plants, so that the number of trained men becomes comparable in both cases. Moreover, a number of these new and highly skilled trades are also being simplified. Today, the fitter is often a worker promoted from the ranks, who tends a single machine and is capable of coping with only a limited number of incidents. He may then have "machine sense", but he has not gone through any methodical apprenticeship. Moreover, the system (which is more than likely to become still more general) whereby the machine-tools belong to the company which constructs them, hires them out and is responsible for their maintenance, still further reduces the number of all-round tool-makers employed by a given undertaking, and makes it still more profitable to have tool makers specializing on a single machine. Lastly and most important, even allowing

[1] Cf. H. Ford. *Le progrès*, Paris, 1930 (translation of *Moving Forward*).
[2] J. Hirsch. *Das amerikanische Wirtschaftswunder*, Berlin, 1926.

for the fact that some of these new skills are used in office work and that, to get an accurate idea, we should have to include certain office jobs in our picture, there is no comparison between the two trends, that is, between the one which creates a few new technical jobs, and the other, which increases the number of automatic and "monotonous" jobs and breeds hundreds of thousands of semi-skilled workers. Is the growth of mechanization likely substantially to correct or even to reverse this trend? It is difficult to say. But one thing is certain, namely that, at the present time, the mass entry of women and of certain unfavourably placed ethnical minorities into industry is leading to another huge increase in the number of semi-automatic jobs, which will certainly not help to restore the trained artisan to his proper place.

How should technical education take account of this development? Is it still even necessary? We may well ask, in observing the extent to which "training on the job" is practised in the U.S.A., and the distrust still felt by some employers for the university man. Yet there can be no doubt about the reply: a broadly-based technical training has become more necessary than ever.

In the first place, as we have already said, the new skills are technical in the wider sense of the term, rather than professional. Thus, technological training should not aim primarily at teaching the tricks and "ropes" of the trade in the workshop, and at untimely and exclusive specialization in the classroom. Technical training should provide a sound scientific foundation of mathematics, physics and mechanics. Technology is not a collection of recipes or descriptions. It should give an over-all view of materials and equipment, and reveal abstract relationships by means of experimentation and measurement.[1] The workshop will take on a new educational value if the teacher knows how to use it for setting technical problems for his pupils to solve by practical work. In that way the need for new qualifications could be met, as could the serious problem mentioned by Professor Moore, technological unemployment due to continued technical innovation. The more the worker's dexterity has a general technical and scientific foundation, the more readily will he adapt himself to changes of job.

In reality, technical training is intended to solve not only occupational, but also human problems. Wherever an attempt has been made to counter the diversification of jobs, which detracts from their interest, by giving the worker an overall view of the undertaking or by permitting a change of job, both the *Uebersichtlichkeit* and his technical all-roundness have been made possible only by basic training. At a higher level, technical education should have the same aims as every kind of education, the exercise of judgment and reflection, and the development of the critical faculty. That is why it is more than merely technically useful—indeed, why it is humanly necessary—to place such training on an intellectual foundation, that is also why "technical" education should include those disciplines which, in our opinion, still make French secondary education so valuable.

This, then, is the problem of the human aspect of the changes that have taken place in industrial work. We have of course already noted with Professor Moore that there has been a diminution in the number of jobs requiring sheer muscular strength. The manual worker no longer suffers from such utter fatigue, nor is he so "worn-out", but he suffers from fatigue of another kind. The continual repetition of the same fractional movement makes not only for local fatigue, but above all for general nervous exhaustion. Tension is heightened by the increased need for a vigilance which, though not continuous, must

[1] Cf. F. Canonge. "Les problèmes pédagogiques propres à l'enseignement technique," *Rapport aux journées d'études des E.N.A.A.*, 1949, Paris.

always be ready to follow each operation. The situation is all too often worsened by general working conditions, by noise or bad ventilation or lighting. Thus a new kind of industrial fatigue has developed, due more to nervous strain than to muscular weariness, and, unlike purely physical tiredness, which is easily reparable, it may show itself only after a long period of work and accumulate from day to day.

It should be realized, however, that the less such fatigue is purely muscular, the more difficult it is to consider it as a simple phenomenon, indeed to see in it anything other than a convenient label for a number of very different phenomena.[1] For instance, can we always be sure of distinguishing correctly between the symptoms of fatigue and those of monotony? In many cases, the individual's reactions are the same—withdrawal into himself, brooding, or a drop in output in the course of a working day. Monotony, however, is far more complex. It is the direct outcome of the fractionalization of jobs and of specialization. The worker is no longer doing something personal, his activity is reduced to a few movements, such as putting a piece in position or fixing it, and often he does not even know quite how it fits into the whole. And just as he has lost his professional skill, so he has generally lost his initiative, his judgment and whatever it is that enables the individual to express himself in, and identify himself with, his work. We must not, of course, over-simplify the problem. A workman who is the master of his machine may find a new interest in maintaining, controlling and adjusting it. A reduction in the range of activity does not always mean a loss of interest. Nevertheless, most semi-skilled industrial jobs are not of a kind to which the worker can become attached. Here we have the root cause of monotony, although we would hasten to add that it is not felt as universally as is sometimes thought. While it is true to say that work which does not require full attention is particularly monotonous, and while moreover many ordinary industrial jobs are not wholly mechanized, both statements are generalizations, and results vary from individual to individual and from factory to factory.

There is no doubt that it is both useful and even necessary carefully to consider anything conducive to "physiological comfort". In that respect, the psycho-technicians are doing valuable work. Is it too much to hope that psycho-technics will also solve the problem of monotony? They can help in that direction by completing the mechanization of jobs, by eliminating the need for those brief interludes of attentiveness which interrupt routine, and by creating the psychic freedom mentioned by Professor Moore and defended by Professor Walther.[2] Once freed from the need to pay attention, the worker could dream at will, and even listen through earphones to musical, variety or more serious broadcasts. Is that a remedy, or merely a palliative? In our view, monotony does more than deprive the mind of its freedom or the job of all interest. It gives the worker the feeling that he is a mere cog in the wheel; he feels that he is never his own master, and his work has no social significance.

In the first place, as Professor Moore very rightly shows, routinization begins for many workers with servitude to the clock. Thus it is caused by the restriction not so much of movement as of initiative, not so much by the limitation of the worker's range of activity as by the fact that he is unable to direct that activity himself. Today, job assignments are mostly worked out, organized and directed without reference to the worker. The good worker is not the man who "thinks", but the one who accurately carries out the

[1] E. Mayo. *The Human Problems of an Industrial Civilization*, New York, 1933, pp. 26-27.
[2] L. Walther. *Psychologie du travail*, Geneva, 1947.

directions on his worksheet. Often there is no need for him either to understand or to interpret. Technical changes and alterations in the organization are made without his knowledge. They may upset his habits, break up his working group, threaten his acquired status, or even render his training useless; he can only accept. In a word—and it is this idea which seems to have inspired the substantial article devoted by Mr. Thorsrud to the psychological aspects—the worker is constantly in a heteronomous situation, and his dependence on other people's decisions is still further aggravated by the lack of stability to which he is subjected as a result of continual technical innovation.

How does he react to this situation? The question has often been studied, from Roethlisberger and Dickson onwards. Mr. Thorsrud gives us a table of these reactions. Informal organizations to combat the undertaking's official regulations are set up within actual work groups, or else there is a spirit of "every man for himself", or scapegoats may be sought. Absenteeism, the turnover and "go-slow" methods are all indications of this attitude. Quite apart from any systematic hostility towards the management, apart from any reasoned interpretation of the situation, the organization of production in itself engenders opposition. Just as a muscle will contract when pulled, one might say that spontaneity turns to resistance when thwarted.

We therefore entirely agree with Professor Moore in emphasizing the artificiality and inadequacy of the current theory of human relations. The fact that Taylor's system came up against, and indeed foundered on, the reef of the "human factor", and that its very shortcomings brought that factor to the fore (as was revealed in 1945 to those still ignorant of the fact by Henry Ford's statements), should preclude our regarding human problems as a mere factor and one of many. Once the necessary technical changes have been recognized and decided upon, the "human relations" school all too often merely corrects their effect on the individual by using new psychological or social techniques. Those techniques—"human engineering", as they have been called—"are only tools in the service of the philosophy of management".[1]

The human aspect of work, however, is a phenomenon in its own right, and, as Professor Moore has said, it should be taken into account from the beginning. Not, of course, that one can make all technical facts fit one's requirements. Undoubtedly they have an inertia of their own, and evolve relatively independently. But only if human problems are first placed in their correct perspective can technical problems be satisfactorily solved.

This brings us to our second point, the social significance of work. Just as work has all too often lost its personal value, so it has lost its social significance. The effect of increasing the size of undertakings, together with technological progress, has been further to emphasize the cleavage between management and staff. The factory and also, in the majority of cases, the township to which it belongs, are groups no longer distinguished by relations between one person and another, but between one function and another, or even, between one stage in the production process and another. However much the factory may try to obtain a hold over the worker, he rarely identifies himself with it. Class ties have replaced the ties of neighbourhood. Not only has the product of labour become an anonymous object, but labour itself has more and more lost its personal significance. Collective output has a collective significance, and its value depends on the place of the working class in society, of the trade unions in the organization of production, and also, more narrowly, of the workers in the factory. From that point of view, the French example of work

[1] D. MacGregor. *Improving Human Relations in Industry, Journal of Social Issues*, IV, No. 3 (Summer 1948).

communities should be more fully studied, as should the question of big collective undertakings (such as TVA in the U.S.A.) or the working class movement in France following the Liberation.

We have so far confined ourselves to studying the more limited problem of the impact of technology on industry, but it is evident that its full implications can be grasped only by going outside the factory. Technological change creates new problems for society as a whole, and only if those problems are clearly understood can specific problems be elucidated.

## TECHNOLOGICAL CIVILIZATION

As we have already said, the presentation of an overall picture of the social consequences of technical progress almost amounts to describing our industrial societies as a whole. With all due regard to the suddenness with which the changes occurred, and to their purely technical character, they were yet so radical that, what took place in some countries at the end of the eighteenth, and in others at the beginning of the nineteenth, century, was in fact an "industrial revolution". While water power dispersed industry beside waterways, tied it to natural physical phenomena, and maintained a complex pattern of country living and craftsmanship, the steam engine gave birth to manufacturing industry, bringing together in the cities both labour and the means of production. It resulted in the depopulation of the countryside and the drift to the towns, and, by concentration and by progress in the division of labour, made possible a tremendous rise in output. What we referred to as the "second industrial revolution" merely precipitated this development and added to its consequences. Electric power reinforced the energy of the steam engine and often displaced it. Concentration was accentuated, the large factory took the place of cottage industry, concentration at the human and technical level was accompanied by financial concentration—and we have the era of big business. It is also the reign of huge cities, of the sudden growth in the number and population of smaller towns. Neither in the growth of towns nor in economic structures nor in ways of living, does the past offer any example of a similar development. It shows clearly the need to think historically, to evolve a concept of civilization which will take into account this irreversible movement. In a century and a half, our world has changed more than it did formerly in 20 centuries, and our methods of study and ways of thought must take cognizance of the fact that we are dealing not only with a new world, but with a world in evolution.

From that point of view, Professor Fourastié's article shows very clearly how the study of technical progress can contribute to economics. Formerly, it was reasonable to expect that an analysis of a society's economic equilibrium would reveal the laws of its growth. It was thought that the dynamic could be derived from the static, could be considered as its natural extension and explained by the same mechanisms. It had to be discovered that was only a short-term dynamic, and that, between the short- and the long-term, there was a hiatus as disastrous to theory as it was dangerous in practice. The work of the modern economist hints at the possibility of an inverse procedure. To understand the static, one must take the dynamic—that disequilibrium which constitutes the chief driving force of our societies—as the starting point; to grasp the meaning of short-term fluctuations, one must proceed from a long-term study.

In other words, no genuine economic science can afford to disregard the pattern of social development. It should be noted that several of the books

referred to by Professor Fourastié are the work of sociologists or historians, not because their analyses of the problems are economic in the strict sense of the word, but because the problems themselves are inseparable from social and historical facts, in particular from the social and historical fact of technical progress. Thus it would seem that we are reverting to an old idea, although it is rarely pursued to its logical conclusion, namely, that economics is but a branch of sociology—admittedly specialized and with its own techniques—in fact, that it is a social science within the real meaning of the term.

Hence, wherever there is a rise in the standard of living, it is due in the last resort to technical progress. Viewed thus, purchasing power can no longer be defined as a relationship between quantities of money, but as a relationship between quantities of labour, account being taken of the productivity of labour. A global and abstract study of the financial aspect is replaced by a concrete and analytical study of the technological aspect. Production is divided into sectors determined by the progress of productivity, and that progress itself can be explained only—and it is here that Professor Fourastié has profoundly modified the meaning of the terms he has borrowed from Colin Clark—by the technical conditions of production. Thus the three "theorems" which sum up the relationship between purchasing power and technical progress might be combined in a single statement: purchasing power varies directly with technical progress.

To the sociologist, more acutely aware than anyone of the complexity of social phenomena, the very simplicity of this relationship might appear suspect. It must, we believe, be correctly interpreted. Firstly, it is only a long-term truth and must undoubtedly be modified to take into account short-term fluctuations and uncertainties, but it offers a framework within which the latter can be evaluated. Secondly, and most important, there is no intention of saying that technical progress is an independent variable. When, for example, Professor Fourastié writes: "If there has been considerable technical progress, whatever be the legal conditions, the profits, the income or the political régime, there is also an improvement in the purchasing power of the consumers," he shows that what counts in the long run is technical progress. But he surely does not mean—and we believe that we are correctly interpreting his meaning—that legal and political conditions, incomes and profits have no influence on that progress. The economist, legitimately following an abstract line of reasoning, confines himself to noting the correlation between two results—technical progress and a rise in the standard of living. It is for the sociologist to show the path taken by technical progress, the conditions that govern it and the structures under which it can take place.

As Professor Ogburn shows so well, technology in fact acts in a variety of different ways. In a greatly differentiated society, a new activity may be introduced or an old one modified, not only in obedience to the direct reasons for its adoption, but often because it serves a number of different purposes. There is no longer any simple causality, but a pattern of causes, following tortuous lines, intersecting, branching, converging. Thus it would be very difficult to hold one change rather than another responsible for the development of institutions. It would even be inaccurate to consider such social changes merely as the consequences of technical processes in the strict sense of the word, since technical processes are themselves methods of production evolved by men and are therefore connected with certain types of human relationships. That is why stages of technical development can be related to institutional situations, and why an overall historical analysis of social evolution can be based on technological progress.

Thus it is possible, as Professor Ogburn has done, to depict the growth of a certain number of institutions. If one wished to sum up that development in a few words, one might say that the former control groups have for the most part disappeared. The family's authority is weakened as its size is restricted. Once the family has been reduced to a couple and their children, most of its functions disappear: economic functions rendered unnecessary by the existing organization of production and by the cheapness of certain items formerly produced by the family (such as preserved foods, clothes, etc.); protective functions, taken over by both physical and psychological medicine and by the growing influence of educators; educational functions, owing to the introduction of schooling, which, in an increasing number of cases, keeps the child occupied from the age of three onwards. Leisure still remains a family function, but will even that long resist the development of community leisure, which is being more and more frequently organized in age groups?[1] Similarly, religion is losing its hold in a vast number of fields it formerly controlled. Is that due to technology? There can be scarcely any doubt when it is realized that, in France, the areas furthest from the influence of the church are primarily the great cities (Paris, Lyons, Marseilles), and that the depopulation of the countryside is to a considerable extent accompanied by the abandonment of religious observance.[2] Lastly, local communities have also lost much of their importance. In so far as the village as been replaced by the town, the pressure of collective opinion is less personal and exercises less immediate constraint.

New control groups are of course forming. It is the professional or political groups which are responsible for introducing norms of behaviour. But their control is not the same as the old control. In our opinion, no hard and fast line should be drawn between primary and secondary groups, and in any case, as Professor Moore suggests, the question must be gone into further. While it is true that secondary groups predominate in industrial societies, turning them into societies of masses, it should nonetheless be noted that the basic associations of the trade union or the party are primary groups. But these primary groups are also controlled by enormous secondary groups into which they are integrated, and to whose interests they are sometimes sacrificed. Thus mass media of communication have become very important, as have the manifestations of public opinion which they partially control.

The best way to study all the consequences of technological development is to try and determine their impact on the individual's position in society, on the psycho-sociological conditions under which he has to live, and their importance to him. It may be said that the growth of technology has placed modern man in a totally different environnment from that of a century and a half ago. The "natural environment" of the pre-machine-age societies has now become a "technical environment" created by mechanization in its various aspects. Natural environment is distinguished by the use of natural energies—wind, water, animal power; it is an activity derived directly from the elements, in which implements are but an extension of professional skill, and the rhythm of the seasons determines the rhythm of labour. Actions are governed by the physiological rhythm. It is an environment in which injunction leadership and information issue from human agencies, in which personal sympathy is an essential element in relationships. Technical environment,

[1] Based on a paper delivered by Professor Stoetzel at the tenth meeting of the Deuxième semaine sociologique (in course of publication under the title: *Villes et campagnes*, Paris, 1952.

[2] Cf. Le Bras. *Introduction to the History of Religious Observance in France*, 2 vols., Paris, 1942 and 1945, and abbé Boulard, *Essor ou déclin du clergé français?*, Paris, 1950.

on the other hand, is distinguished by the artificial production of energy, the rational organization of labour, mechanization, information through intermediary agencies, and secondary relationships. From now on, man's contacts with nature are made through the medium of techniques which grow continually more complex, and what is worse, his contacts with other men are often made through those same media.

There is of course no such thing as an entirely "natural" environment, in which human technology has not already changed nature to a greater or less degree. Even the most elementary society uses techniques, thereby transforming the aspect and significance of natural factors. But mechanization has developed so rapidly in the last 150 years, and has brought about so great a *number* of changes, that one may legitimately speak of a new *quality*, of a new environment, namely of a technological civilization.

What is it, for example, that today turns an urban area into a city? Is it concentration of homes, the number of its inhabitants, or its administrative or political importance? It is all that, but it is also the type of occupation of the majority of its population, its methods of transport, the organization of home life and leisure, its mentality, level of news services, interests—in short, everything which goes into the making of city life. Indeed, the term city even seems somewhat outdated when applied to our urban agglomerations, our enormous built-up areas. Moreover, there are cities which appear to be more town-like than others, not because of the size of their population, but on account of their technical standard of living. In France, for instance, a large market town, in which the wages or profits of agriculture may be spent, may have remained more rural despite its 50,000 inhabitants than a small industrial centre with a population of only 15,000. From our point of view, the urban character of a town must be assessed not by its size, but by what might be called its *urbanization index*, which would measure the psycho-sociological conditioning of its inhabitants. Such an urbanization index would show the degree of influence of the technical environment.

An important influence of that environment is the change it brings about in individual or family needs. Mr. Thorsrud rightly recalls Sherman and Henry's remarkable study on the Hollow communities. Starting from the most isolated groups, wants are gradually found to increase and the level of ambition to rise. The individual whose life is most difficult, most uncertain and most restricted states that he has no desires beyond what he possesses. As life grows easier and technically more advanced, wants grow too. They even tend to grow more quickly than resources, for social differentiation leads to inequality and sets as its target the existence of the most favoured. Needs acquire new forms and are satisfied by new methods, as a result both of their own growth and of the great spread of advertising techniques which emphasize their differences. Our societies, and more particularly American society, are characterized by this multiplicity of wants, their stimulation and the means of satisfying them. Surely then, leaving aside strictly vital necessities, wants have a social aspect and are governed by their environment and its resources. And this provides a very significant example of the motivational changes which Mr. Thorsrud rightly sees as one of the chief psychological consequences of technical progress.

The development of leisure is another important characteristic of this new civilization. Made possible by the shortening of the working day, it manifests itself in travel for pleasure (itself linked to the development of transport), in theatres, cinemas, etc. Techniques such as the film and the radio are in the forefront of this development. Should we, like so many essayists who look to

the past, complain that they are "mechanical", denounce the mass-production of films and the mediocrity of "popular" radio programmes, and regret the replacement of individual musical performances by "canned music"? Colour reproductions and gramophone records, radio or television broadcasts can help to disseminate authentic culture just as much as they can spread rubbish, and the cinema holds out an immediate promise—in many cases already fulfilled—of a great and powerful art, accessible to all. In this case, it is particularly clear that technology is but a servant, and that our only problem is to define its aims and decide who shall fix them. It seems to us that one of the great advantages of our technological civilization is that it can develop and enrich our leisure by providing the necessary time and entirely new media. The problem is not so much one of education as of organizing the public. Thus, we should closely follow the development of the institutions for the use of leisure time which are everywhere being set up. Discussion circles, repertory companies, film-clubs, or artists' study groups may offer a vast number of people the opportunity to express themselves and to show the initiative they are denied under present working conditions. Do they in fact give such an opportunity? Certain English studies are pessimistic on the subject, suggesting that it is the upper classes which in fact organize and take the initiative in the voluntary associations. But is not that due in part to the fact that many such organizations are the successors to employers' welfare and amusement services, and may we not expect that, once they have been democratized, those bodies will distribute their activities somewhat differently?[1]

The fact that we have been stressing the urban aspects of technical environment must not be taken to mean that the rural world is still plunged in its natural environment. That is less and less the case, even in France, and while there are still considerable differences between the two ways of life, as is shown, for example, by the difficulties encountered by the countryman who wishes to go into industry, and by his fairly long phase of instability, yet technical conditioning is proceeding apace in rural environments. That is of course primarily due to the extension of agricultural mechanization and to the introduction into rural life of certain elements of urban life (motor cars, radio, telephone, domestic appliances), but also to the fact that relations between the two environments are now closer than they ever were before. The development of transport has led to the intermingling of populations on a huge scale, by putting travel for pleasure within reach of the masses. And it is not only the holiday resorts—mountain, seaside or spa—that benefit therefrom, but the countryside as a whole, for each year it is visited by the very people, or their children, who but recently left it for the towns. They bring with them urban habits, ideas and mentalities. Moreover, the growth of transport facilities enables more and more workers to make their homes at some distance from their work and to live away outside the towns, thus considerably extending the surburban areas.

Should we, then, expect an immediate overall change in town and countryside? Will large-scale industrial decentralization (made possible by the transportability of electric power), the dispersal of living quarters (justified by the reduction of working hours, and more especially of working days, and by the extension of individual forms of locomotion), and conversely, the redistribution of rural housing (as a result of mechanization and in order to extend a certain number of urban services to rural areas); will these innovations,

[1] The studies referred to are in course of publication. Some preliminary indications may be gained from a law thesis by Isabelle Grosjean, *Le service social volontaire en Angleterre*, submitted to the Faculty of Nancy, 1951 (roneoed).

of which symptoms are already visible, lead to the "countrification of the towns" and to the "urbanization of the countryside"?[1] Here again, we would eschew prophecy and avoid encouraging hopes that are still slender. For the present, the workers' daily travel still weighs heavily on the national economy and constitutes an additional element of fatigue for those concerned. Industrial decentralization, while attainable where it is a question of fostering small centres (and even then, a whole army of habits has to be overcome), raises serious technical problems as soon as the aim is greater dispersal. Not that our conclusions need necessarily be pessimistic. But any such change presupposes much more than immediate technical readaptation; it requires concerted long-term action, far-reaching overall plans, a tremendous campaign of information and extensive powers.

The central problem of the evolution of a technical environment is in fact the co-ordination of initiative. The anarchical proliferation of techniques is at least partly responsible for the growing density of the jungle formed by them. In competitive and individualist societies, the individual is subjected to an increasing number of independently evolved techniques to which he is more and more liable to fall a prey. The power of technology has become so tremendous, the forces set free by it so powerful, and the sufferings it can cause so great, that we are no longer entitled to adopt an attitude of *laisser-faire* in the matter. It should be understood that technology has become a problem of governing.

What, in fact, is the individual's position in this new environment? Has he more freedom as a result of the afore-mentioned relaxation of the hold exercised over him by the control groups? Negatively speaking, he has, since he is less closely dependent. But freedom is the power to take specific action and how much real power have those who do not hold the reins of economic life, who do not control the information media and whose minds are continually subject to pressure from new technical media? Admittedly, we now know that there are limits to the moulding of public opinion, that a statesman may be elected despite universal press opposition, and that even the best conducted propaganda campaigns sometimes fail. But is it surprising that this relative impotence of the man-in-the-street has made the concept of "anomy" fashionable in the U.S.A.? Traditional backgrounds have been destroyed, relationships are less and less personal, new groups are not sufficiently strong to provide a stable background for thought. Industrial society, as Professor Moore shows, is fragile not only on account of its complexity, but also because of its lack of human integration. Hence so much collective unrest and so much individual disequilibrium. The internal conflicts of production react on society as a whole.

## THE ROLE OF THE HUMAN SCIENCES

To conclude, what is the role of the human sciences? For the most part, we resort to them in the hope that they will provide some means of tackling the problem. Admittedly, the results of positive research today enable both psychology and sociology to work out their own methods. Those methods may be divided into two groups. On the one hand, study techniques, which were listed by Professor Lasswell, and which allow for accurate and profound research into the more neglected aspects of industrial problems—problems

[1] The term is taken from Mr. Sauvy. See meetings III, VIII and XI of the Deuxième semaine sociologique concerning the state of these problems in France.

of housing, of leisure, etc.; on the other hand, active techniques, such as selection, vocational guidance and the whole scale of individual or collective therapy. In view of the position already occupied by several of these techniques and the positive results they produce, we do not require to defend them, but may assume that the human sciences will in all probability carry their activities still further.

Should we not demand even more from them? Of course we should, and to take but one example, psycho-technics and certain sociological techniques may help to "humanize" industrial work. But we have already had occasion to point out that their effect is limited as long as they are merely techniques in the service of a certain "philosophy", and confine themselves to improving an existing order. It is surely noteworthy that administrators and heads of staffs themselves often realize this fact. And equally noteworthy that, on the one hand, a technician like Gillespie should assert that his method is merely an instrument whose value depends on its user's intentions,[1] while, on the other, a psychologist states that he is less concerned with inventing personnel administration programmes than with "devising a means of changing the attitudes of management towards its employees".[2] Such a change in attitude would not, of course, solve all problems. We do not even believe that they would be automatically solved by changing our social structures, for our technical environment is a world-wide fact, certain fundamental aspects of which are bound to be reflected in different social structures. But although such a change may not suffice in itself, it is nonetheless essential.

The same problem arises out of the evolution of law, as summarized by Professor Savatier. Here again, a distinction must be made between progress in the means at the Law's disposal and the evolution of a new law as required by new fields of activity and by guiding principles. While it is true that legislation alone will never solve the problem of human relationships in industry,[3] nor legal superstructures the antinomies revealed in actual practice, yet it is also true that the legal systems evolved by these problems furnish legal experience which may infuse a new spirit into the guiding principles of law.

But we have reached a stage at which it is no longer enough merely to accept and describe technical evolution. Its social consequences are both so tremendous and so threatening that its evolution must be foreseen and directed into appropriate channels. That, in our opinion, is the great task of the human sciences, as Professor Lasswell has so rightly emphasized. It is for them to help us to clarify our situation and thus to increase our freedom of will and choice. Technical evolution is not a compelling fate whose consequences we are bound to accept. It is a form of man's evolution, and, as his knowledge grows of what his decisions will signify and what his choice must be, so will that evolution be increasingly humanized. Thus, whether or not the human sciences can make an effective contribution depends on their problems and results becoming widely known and understood by more than just a minority, so that decisions may one day come to be taken collectively. If our attempted analysis of technological civilization is correct, then it should be the aim of any scientific knowledge worthy of the name to help the men and women of our time to attain a fuller freedom through a better understanding of their own condition.[4]

[1] J. J. Gillespie. *Free Expression in Industry*, London, 1948, p. 147.
[2] B. Baxter. "Employee-management Relations" in *Current Trends in Industrial Psychology*, Pittsburgh, 1949.
[3] F. Harbison. *Industry and Society*, edited by Whyte (W. F.), New York and London, 1947, p. 173.
[4] We should like to take this opportunity of thanking Mr. S. D. Raynaud, who assisted in the preparation of this article.

# PART I

# PROBLEMS AND METHODS

# SOME CONCEPTUAL ASPECTS OF TECHNICAL CHANGE

S. Herbert Frankel

When I was privileged to receive an invitation to contribute this article I hesitated for some time before accepting it. I wanted to try to define more clearly in my own mind the problem involved, and the contribution which an economist might make to a discussion of it at the present time.

I came to the conclusion that perhaps the most useful approach would be to examine some of the conceptual ideas which, consciously or unconsciously, provide the framework of controversy in this field of study. In doing so, I shall not confine myself to any particular stage of economic development, or any particular region, except for purposes of illustration.

As a starting point it may be useful to draw attention to certain semantic peculiarities which, I think, are in themselves indicative both of the present climate of opinion, and of some confusions which seem worthy of further examination.

The first of these semantic, or definitional, peculiarities is the fact that we so readily tend to speak of "the social consequences of technical change", and not of "technical change as a social consequence". This is very significant. It shows that we have formed the habit of regarding technical change in mechanistic terms—as an independent force, which, by impinging on society, sets in motion certain desirable, or undesirable, reactions. These reactions, since they are regarded as the inevitable consequence of the external force, are then presumed to require study in the same fatalistic spirit in which one might try to cope with the destruction left in the wake of a battle or of an earthquake.

A parallel can be drawn between the use of the term "the Industrial Revolution", with its undertones of cataclysmic suddeness and consequences, and the frequent implication that technical change necessarily takes a similar form, and shatters all around it. But, as an eminent contemporary economic historian[1] has reminded us: "the changes . . . spoken of as the Industrial Revolution . . . were not merely 'industrial' but also social and intellectual. . . . The word 'revolution' implies a suddeness of change that is not in fact characteristic of economic processes". He remarks that "the phrase Industrial Revolution has . . . become so firmly embedded in common speech that it would be pedantic to offer a substitute". Let us hope that the term technical change is not yet as inseparable from its present and narrow mechanistic connotation.

The Oxford Dictionary defines technique as the "manner of artistic execution or performance" and the word technical as "belonging or relating to an art or arts". None of these (or other available) definitions indicates the presence of any exogenous forces affecting the work of individuals concerned with changing techniques. On the contrary, they refer to the ways in which certain

[1] Professor T. S. Ashton; *Industrial Revolution 1760-1830*, Oxford University Press, 1948.

activities are conducted. But as Professor Oakeshott has emphasized in his Inaugural Lecture on Political Education to "understand an activity *is to know it as a concrete whole; it is to recognize the activity as having the source of its movement within itself* (Italics not in the original). An understanding which leaves the activity in debt to something outside itself is, for that reason, an inadequate understanding. And if political activity is impossible without a certain kind of knowledge and a certain sort of education, then this knowledge and education are not mere appendages to the activity but are part of the activity itself and must be incorporated in our understanding of it".[1]

In the same way, I submit, it is important to recognize that an activity (or performance) which, for convenience, we describe as technical, does not consist as it were of two parts, namely of (a) knowing how to do a thing, and (b) of doing it. It consists essentially of one process as a whole, i.e. that of conducting of the activity itself. This can be illustrated by the arrestingly simple example which Professor Oakeshott has used in support of his thesis that "political activity comes first and a political ideology follows after". He takes the example of cookery: "It might be supposed that an ignorant man, some edible materials, and a cookery book compose together the necessities of a self-moved activity called cooking. But nothing is further from the truth. The cookery book is not an independently generated beginning from which cooking can spring; it is nothing more than an abstract of somebody's knowledge of how to cook: it is the stepchild, not the parent of the activity. The book, in its turn, may help to set a man on to dressing a dinner, but if it were his sole guide he could never, in fact, begin: the book speaks only to those who know already the kind of thing to expect from it and consequently how to interpret it.

"Now, just as a cookery book presupposes somebody who knows how to cook, and its use presupposes somebody who already knows how to use it, and just as a scientific hypothesis springs from a knowledge of how to conduct a scientific investigation, and separated from that knowledge is powerless to set empiricism to work, so a political ideology must be understood, not as an independently premeditated beginning for political activity, but as knowledge (in an abstracted and generalized form) of a traditional manner of attending to the arrangements of a society. The catechism which sets out the purposes to be pursued merely abridges a concrete manner of behaviour in which those purposes are already hidden."

Similarly, if we are to speak meaningfully of the effects of technical change we must, I suggest, be very careful to avoid falling into the common, and facile, error of thinking that changes in knowing how to do a certain thing can be separated from changes in the actual doing of it. This is the type of error which is frequently introduced when we speak of making available to a backward society the "know-how" of a new technical process. In doing this we are not making available two processes, namely, a mental process of abstract technical knowledge on the one hand, and of the actual performance on the other. We are speaking only of the one process—the performance itself. The idea that technical change is somehow an exogenous force altering the established day-to-day activities of society springs, I suggest, from this erroneous way of speaking and thinking. It consists in the fallacious belief that a society's activities proceed in two separate compartments: the first containing the process of abstract willing or knowing, the other containing the application of such willing or knowing. It is on the basis of a similarly

[1] *Political Education*, An Inaugural Lecture by Professor Michael Oakeshott. Bowes and Bowes, Cambridge, 1951.

erroneous conception of the nature of economic activity that we so readily conclude that technical change is a kind of abstract force which has certain social consequences, and fail to see that what we describe as the consequences of this imaginary force is simply part and parcel of the activity itself. When, for example, there is a change from farming to coal mining, this will involve the development of new aptitudes and new habits of work over a wide range of new economic and social activities. The change will not be completed until it has resulted in a community all of whose activities (and not only those directly related to the production of coal) have been rearranged or have grown into a new pattern of life and work. If now we regard the introduction of coal mining as a purely mechanical process, which will have certain social consequences, we fail to see that what we regard as the result or consequence, is but the continuous, and necessarily uneven, process of change itself. Thus, if the workers in the coal mine are inadequately housed, or suffer deficiencies in the standard of nutrition, education, or recreation now necessary in their new environment, these are not the consequence of the process of change to coal mining, but rather of a failure to complete it. Even the direct activity of extracting coal cannot be brought to optimum efficiency unless all the other economic and social activities, to which that task must be related and with which it must be integrated, have been developed. Indeed coal mining cannot even begin until some change in the previous aptitudes, habits, and patterns of social organization have taken place.

Let us examine for the sake of illustration a highly simplified example of what, presumably, would nowadays be regarded merely as a technical change. Let us assume that it is desired to increase the productivity of a subsistence cattle-owning African community which has never engaged in the production of butter or cheese either for sale or for its own consumption. It is hoped not only to get this community to consume these products itself, but also to market some of them so as to enable the society to increase its income by selling the surplus dairy produce, and buying other goods with the money so obtained.

At first sight the problem might appear to be merely one of introducing new methods of production, and the instruments, tools or machines appropriate thereto. But what is really involved is a vast change in social beliefs and practices—if, that is, it be assumed that the society in question is to remain intact as a society—an assumption which, as we shall see, raises questions of quite another kind. Here let us, for the moment, consider only what far-reaching social changes will have to be made to enable technical change—which we nowadays so readily tend to abstract as the prime mover—to be introduced at all. The utilization of cattle as a source of income in a monetary and accounting sense presupposes a basic alteration in the economic structure of the society. It presupposes not only the introduction of money, but a complete re-casting of the traditional values of the community. Thus it presupposes a change in the system of land ownership and use; in the laws and conventions governing access to it, and in the traditional beliefs as to how, and by whom, it is to be cultivated—whether by men or by women, by individuals working for themselves or for others. Moreover it presupposes an aptitude, ability, and willingness to tolerate, recognize, and provide for the emergence and training of groups in the community which are not attached to the land at all. This, in turn, presupposes the growth of new aptitudes and patterns of behaviour which will regulate their social and mutual relations not in accordance with the customs suited to shifting subsistence cultivation, roaming cattle herds,

and the thrill of the chase, but to those of a settled agricultural and urban population. There is presupposed, therefore, the parallel emergence of a group of persons concerned not only with dairy production itself but with the transport, distribution, marketing and finance of all that the new producers have to buy and all they have to sell. These, however, necessitate a political structure—local, provincial, national and trans-national—suited to the establishment of these complementary economic, scientific and financial activities; they presuppose therefore the willingness, aptitude, and ability of the community to permit, and indeed to promote the growth of all the legal, political and administrative institutions necessary to harmonize the rights and duties of the persons engaged in this new complex inter-dependent economy.

The purpose of this long list of social adjustments is to show that whatever it be that we may care to designate as technical change, it is but one aspect of mutually determined, and determining, processes of growth on many fronts of the social structure as a whole. It is idle to endeavour to ascertain which change is the innovation or cause, and which is the effect. For when we designate one change as cause, and another as effect, we are but examining the process of change itself from different points of observation.

The attempt to establish particular absolute causes of change is misleading, for it misconceives the very nature of the process of change or growth itself.

Let me revert again to that commonplace view of technical change which regards it as resulting from the application of new knowledge—of technical "know-how". Such a view presupposes a kind of mental certainty as to the change which is required in order to bring about a particular consequence in the near or distant future. Basic to this way of thinking is the implicit assumption that the "know-how" exists, as it were, as a stock of techniques—like a stock of raw materials—which can be drawn upon at will and applied to any situation in order to produce the desired, and therefore foreseeable, end. It is because we tend to think in such abstract terms that we are led to imagine that somehow economic development, or the lack of it, can be explained in terms of the presence or absence of adequate quantities of factors of production; as when it is suggested that all that is required to assist the development of backward societies is to give or lend them part of that accumulated technical knowledge and capital—just as one might give an injection to a patient to cure him.

This way of speaking is based on a profound misconception: technical knowledge, the machine and other capital goods never exist in the abstract but always only in the relatively fleeting form suited to the momentary situation, and to that complex of unique problems to which they have been adapted. They have no power independent of the performance of which they are capable. They are the expression of man's response to the changing problems set by the environment and by his fellow men. When the problems which constitute man's framework of reference change they become useless. That is why they cannot be readily transferred from one situation to another. For meeting any new situation, new thoughts, new aptitudes, new action will be required. But knowledge has to grow; capital has to be created afresh on the basis of continuous experiment; and new hopes and beliefs have to evolve to urge men and women forward—for in the last resort they alone are the carriers alike of past experience, and of new endeavour. It is because all these new activities are not independent of the existing institutions into which they have to be fitted, and which have in turn to be adjusted to them, that the process of change is so complex and—if it is to proceed harmoniously—necessarily so slow.

It is the attempt to simplify that process—to avoid the gradualness of change in order to pluck the quick fruits of endeavour in one direction, at the expense of inactivity in others—which accounts for social maladjustments. In a society in which all changes were to take place at rates so well adjusted to each other as not to disturb the basic harmony and integration of its constituent parts, there would be no social consequences of change but only harmonious change itself. When, however, rates of change are very discontinuous it may well happen that one sector of the society cannot be meaningfully integrated into the social life of the community at all—so that, as far as that sector is concerned, society as a whole no longer exists.

The most extreme case of failure to achieve a balanced rate of change is that of slavery. It illustrates in its most terrible form the deliberate disintegration of established patterns of social and human values in order to pursue an immediate objective. Slavery not only detaches men and women by force from an established pattern of social relationships but, by using them as chattels for the ends of others, denies them both the opportunity to reconstruct a new society for themselves, and the right to become an integrated meaningful part of the society of their masters. In a society based on slavery the uneasy and unstable rule of force takes the place of that social harmony necessary for the full development of each part of the disrupted whole.

Slavery is an extreme case of the establishment of new structural patterns which by their very nature prevent further economic and social growth. But there have been, and continue to be, many less extreme yet parallel situations.

The large movements of indentured labour during the nineteenth century—like the migration of some recruited labour in Africa today—illustrate the consequences of attempts to use labour in pursuance of an immediate objective without considering the need to integrate the individuals concerned into a new meaningful social pattern.

In South Africa, for example, the need to obtain Indian labour for the Natal sugar industry arose because it was not possible to detach Africans for the purpose from their own indigenous society. The structure of the sugar industry was thus established on the basis of supplies of unskilled labour, and the Indians were forced to remain separated from both the European, and the African, social structures. This not only inhibited the evolution of a meaningful society for Indians in South Africa but also froze the economic pattern of the sugar industry itself. The whole economic evolution of Natal was retarded by the failure to establish the Indian immigrant as a creative part of South African society.

I suggest that when we view the problems of change in the light of these considerations we shall accustom ourselves to focus our studies, to a greater extent than heretofore, on the historical evolution of the structural patterns of developing societies. By so doing we shall, I believe, be able to place the emphasis in studies of change where it belongs, namely on the need to discover to what extent rates of change in different parts of the society are moving towards, or diverging from, that minimum degree of social and psychological harmony necessary for its maintenance of evolution.

In using these terms I am aware of the fact that I am begging many questions. However, what I have in mind is something far simpler than the necessarily vague terminology I have used may at first sight indicate.

To illustrate this let me again refer to the lessons of the Industrial Revolution and quote again from Professor Ashton's valuable judgment: "Experience has taught us," he writes, "that an industrial society needs a framework of public services if it is to operate without social discomfort. . . . With the best will

in the world, the transition from farms and cottages to factories and cities could never have been smooth. If the legislative machine had turned out statutes with the same speed as the mules turned out yarn there would still have been social disorder. For much of the overcrowding and squalor was the result of the fact that progress in science was then, as today, more rapid than in administration. 'The remote influence of arrangements has been somewhat neglected,' wrote Dr. Kay in 1832, adding to this meiosis that the neglect arose 'not from the want of humanity, but from the pressure of occupation and the deficiency of time.' Not until the whole apparatus of government had been drastically reformed and a body of qualified public servants had been called into being could life in urban areas be other than squalid. If the Industrial Revolution was not able to bring its rewards in full measure to the ordinary man and woman it is to the effects of administrative, and not of economic processes, that the failure must be ascribed."

What, I suggest, is most required now, in relation to the thought and practice of our predecessors, is a new awareness, not only of the need to adapt administrative and social arrangements to the pressure of economic and political events, but also of the fact that the political and economic pressures themselves so largely depend on those arrangements. Thus we should envisage neither the pressure of technical, nor those of political happenings as accidental, in the sense that they are independent causes of our problems. Instead we should accustom ourselves to see them as mutually inter-dependent processes. For that reason we must discipline ourselves to examine them everywhere in sufficient detail to lay bare their mutual relations. By so doing we may perhaps hope to quicken that sense of social inventiveness and responsibility which makes change not a burden, but an adventure in the art of government and mutual adaptation in free societies. For the sting of change lies not in change itself but in change which is devoid of social meaning.

Let me conclude with a final example. All over Africa, and, indeed, in many parts of the underdeveloped world, erstwhile members of simple rural economies find themselves drawn into urban centres of industry. For many of these men and women these centres are only the places in which they work; their social self remains located with their families, which are still eking out a precarious livelihood in rural conditions as yet unadapted to modern forms of production or the basic needs of health, education and the like. Even when these families come to the towns they find themselves psychologically and socially ill-equipped to establish satisfactory patterns of living there. Yet we know little so far about the administrative arrangements which must be evolved to cope with the changing activities of these wanderers in the twilight of newly emerging social structures. Very few detailed studies of their thinking and their needs exist; fewer still of their psychological reactions, and least of all of the ways and means of emancipating them to grapple with their problems by that most basic form of all political education—the conscious sharing in the governance of affairs by trial and error.

We know little of the processes involved in the vast change of aptitudes which these developments require, of the time they take, and the obstacles they encounter. There is need of carefully documented comparative studies of them in different regions. Moreover, only experience and a knowledge which exhibits clearly the full burden of change can prevent needlessly hasty development in this or that direction. All too often a socially uneconomic development is embarked upon because those who initiate it are unaware of its cost, or not responsible for its unavoidable accompanying economic and social changes. But change which is not in harmony with the social resources and

needs of a community may well prove to be not a blessing but a curse.

It is here that the economist can be of help in examining the relative individual and social costs and benefits of alternative choices, and in disentangling the real from the apparent expected effects of the fiscal and economic burdens involved.

# SOCIAL EFFECTS OF TECHNOLOGY IN INDUSTRIALIZED SOCIETIES

WILLIAM FIELDING OGBURN

There are principles of social change due to technological developments, just as there are principles of law or principles of mathematics. Such principles or processes are common to change in industrialized and in other societies as well. It is well to set forth these processes briefly.

## PROCESSES OF SOCIAL CHANGE

These three processes may be labelled Diversification, Sequences and Convergence.

### *Diversification*

The process whereby an invention has many different social influences is called diversification. Thus, television affects education, entertainment, the family, politics, libraries, science, athletics, medicine and the theatre. One hundred and fifty different social effects of the radio have been recorded. [1] From not all inventions flow such multiple effects, of course.

### *Sequences*

Of the sequential process, the first effect of a technological development is direct, and more or less immediate. For instance the steam engine had a direct effect of transferring spinning and weaving from the cottage to the factory. The first effect of an invention infringes generally (a) on the producer and (b) on the user; and usually without much delay. A wagon maker turns to the making of automobiles. The traveller between two nearby communities who goes by automobile or auto bus does not use a railroad. These direct effects are well known. That they are largely upon economic institutions and habits is a distinction not always made.

The force of an innovation does not stop, however, with its direct effect. As the force of a billiard player's arm does not end with the motion of the cue ball but is imparted successively to other balls on the table, so the impact of an invention has derivative effects upon others than users and producers.

[1] *Recent Social Trends*, Chapter III, McGraw Hill & Co., New York, 1934.

As an illustration, the direct effect of the steam engine in transferring industry from the household to the factory does not then cease but changes the nature of the work of men and women. Husbands work in factories in towns or cities, as do some women and children. The derivative effect of the invention of the steam engine does not end at once but its force is felt upon other related institutions and customs. Thus a second derivative effect of the steam engine is on the authority of the husband as head of the household. Before the advent of factories, when the household was the centre of production and the members of the family and their relatives constituted the labour force, a manager or boss was necessary to ensure production. Hence the authoritarian family. But, with the husband working in a mill away from home, the children in school, and the wife perhaps at work away from home, and with farming and home industry given up, there is neither the occasion nor the opportunity for the husband to exercise his former authority. Thus a second derivative effect is the decline of the authoritarian family.

Nor does the influence of an invention necessarily end with the second derivative effect. In the case of family changes due to the factory system, it is observed that in cities, where the factories are, husbands and wives separate and become divorced more than they did in the rural areas where there are no paying occupations open to women away from the home, where the authority of the husband is great and a skilled housekeeper or assistant manager is greatly needed. There a third derivative effect of the steam engine on the family is the loosening up of the ties that bind the members of the family together and hence there are more separations and divorces.

This sequence of cause and effect is descriptive and in no sense denies that there are in other cultures other causes leading to changes in occupation, loss of authority, or separations.

This sequence of derivative effects proceeds somewhat as the links in a chain follow one another.

*Convergence*

The third principle of the effects of invention in changing society is convergence. Many different inventions converge to produce an effect. Thus the suburbs of modern large cities result from the convergence of a variety of inventions—the steam railroad, the electric road, the auto bus, the private automobile, the telephone, the radio—to which the helicopter may soon be added. The factory was not the result of the steam engine alone, but of many other inventions, notably steel. Nor was the working of women away from the home the result of the factory alone, but also of contraceptives, and of transportation inventions.

The principle of convergence means that the relative influences of an invention tend to diminish through successive derivative impacts. For the changes in each institution and in each custom are likely to be the result of the convergence of several different forces, some flowing from different mechanical inventions and some perhaps from different social inventions. Thus the decline of the authoritarian family was accentuated not only by the invention of the factory but also by the transportation system, the school system and the typewriter which takes female members of the family into offices for clerical work. So each successive derivative influence is likely to be only one among several converging influences. If there are four such converging influences on the first derivative change, then the influence of a single invention is one in four; and if there are six on the second derivative change from this

invention, then the influence of the original invention is one in 10. The influence of the steam engine on divorce is therefore only one influence among many. The relative influence of an invention diminishes as it reaches out through a series of succeeding impacts.

*The Pattern of Social Changes*

Not only is a change in an institution the result of converging influences, but the change is also likely to flow in several different directions, making impacts on other institutions or parts of culture according to the principle of diversification. Thus the factory system influences not only the work of wives and husbands, but it affects population, cities, health, etc. So, the working of women away from home affects marriage, government, laws and morals.

The pattern of the influence of invention on society is like a net, rather than like a single chain. The force of an invention sets up a series of changes, often over a considerable portion of the network of interrelations between the different parts of society.

*Cultural Interconnexions*

It is difficult to measure or even to trace the effect of a single invention because of convergence and its sequential nature. But the difficulty of measuring it is not a denial of its existence. Because of this difficulty, though, social scientists have been slow to appreciate the phenomenon of derivative social effects of technological developments. Also, because of the interrelationship of these changes, social scientists have done little to trace the many causes of a social change or the many changes precipitated by a single invention. These difficulties are owing to the previously mentioned principle of sequences and convergence.

The reason of the complexity of the pattern of social change resulting from technology is the vast number of interconnexions that exist between the different parts of society. Family is related to education, to government, to industry, to religion. Education is connected with industry, with government and with religion; and so on.

While these principles are applicable to all societies, there are differences in complexity between modern industrial society, and the similar societies of earlier times. For one characteristic of modern industrialized society is its differentiation into many heterogeneous parts. This heterogeneity is not found in simple societies. Also this great number of differentiated parts are generally interconnected. Some of the parts are only slightly connected—for instance, music and the factory system—though architecture is definitely related to the factory system. It is important to appreciate these interconnexions for they are the basis of the network pattern which marks the social effects of technical change. With such a network of interrelations, a single invention can set in motion a large section of the net. With 100,000 inventions a year it is not surprising that all of civilization is in rapid motion, in some instances, indeed, violent.

## SOME RECENT INFLUENCES OF TECHNOLOGY

Bearing these processes of social change in mind, we pass on to some illustrations of their operation in modern industrialized societies.

In societies before the Industrial Revolution the daily behaviour of mankind was mainly determined by three institutions—the family, organized religion and the village community. Economic institutions away from the homestead and village were poorly developed and the central government of a state touched the daily lives of the citizen very infrequently. In modern industrial urban society, the influence of the family, the church and the village has shrunken, while economic institutions and central governments have greatly increased.

*Industry*

These institutional changes appear to be caused by mechanical inventions and discoveries in science. For instance, steam engines and blast furnaces providing mechanical power and steel have, with thousands of their applications, created manufacturing establishments specializing in specific commodities, which are transported by railroads and exchanged through merchants with the aid of money and credit institutions. So technology has brought a prolification of economic institutions, representing great wealth and power and which have transformed the family, church and village.

*Family*

This economic development meant the transfer of economic production from farm and cottage, thus weakening the family as a producing institution. Further changes in the family, particularly its reduction in size occurred because of another invention, the contraceptive. Indeed it is difficult to find any recent changes in the family that have not been due through sequential influences to these inventions of contraceptives, steam and steel. The revolution in the family, then, has been largely due to mechanical inventions.

*Village*

The village has not declined in modern industrial societies, but, relatively, its power over the population has decreased because smaller proportions of the people live in villages. More and more people dwell in towns and cities, hence more and more of the environmental influence over the lives of the inhabitants derives from urbanized areas. Urbanized areas are possible because of transportation which, in pre-industrial times, was largely by boat, and the few cities were on navigable waters. Railroads and automobiles have made possible the present huge urban population living inland. Factories and the communication inventions have also been factors contributing to the dominance of cities over the countryside. The centres of dispersal of the news are now the great cities, which depend upon modern technology.

*Church*

The influence of organized religion has been withdrawing from various sectors of society during the past several hundred years. Formerly many activities were under the ægis of the church and of religion—in education, art, philosophy, morals, medicine, diets, marriage and government. In modern cities, the power of organized religion over these activities, except as concerns morals, has markedly diminished. As to the causes of this secularization of life the most fruitful search for the answer lies in the field of science. Scientific

medicine has taken healing largely away from the province of religion, for instance. The knowledge of the universe supplied by astronomy and physics has affected religious beliefs. So also the nature of man and ideas of life after death have been influenced by discoveries in biology. As secularization has proceeded, education, art and government have been less influenced by organized religion. Science, then, which is very similar to technology, has had a profound influence on the role of religion in society though not on the true significance of religion.

*Government*

With the decline of the church, the family and the village over the years, none of these is in a position to exercise control over the new giant, modern industry and the correlated economic institutions. The only social institution with any such possibility is government. One of the causes for the huge expansion of governmental functions has been the need of both controlling and aiding modern industry. Thus the growth of government is in part a derivative effect of the development of science and technology.

The growth of governmental institutions has also been owing to the increase and distribution of population, which has been much affected by the transportation inventions, and the increase in food owing to the application of science and technology to agriculture.

An early and striking distribution of population was the concentration in cities, which led to governmental functions of fire control, policing, sanitation and health measures. The distribution of population over large areas has meant in earlier times serious problems of government; and empires have disintegrated, for the agencies of transportation and communication were not developed as rapidly as the military inventions which made empires possible. But with railroads, telegraphs, automobiles, aeroplanes, which made possible the transmission of the output of the highly developed printing presses and of the human voice, central governments were able to extend their scope.

Furthermore, the decline of the family has meant the transfer of many family functions to government, such as care of the aged, the education of children, the protection of the members of the family. The growth of government has also been accelerated by modern wars, for which a very large number of social and economic institutions must be mobilized. For this work, no other institution is so well suited as government. The exercise of such administrative functions needed to command social and economic institutions, as well as military forces, has meant an enormous expansion of governmental activities.

The rise of big government then is largely a derivative effect of science and technology which led to the rise of modern industry, the decline of the family, the shrinking of the activities of the church and the relative diminution of the influence of village.

*Freedom*

Parenthetically, the power of modern industry and of modern society has been decried by many its curtailment of the freedom of the individual. Though this is true, it should not be forgotten that much freedom was gained with the decline of the authoritarian family, with the weakening of religious sanction in many sectors of life, and by the shift from the gossip and informal social pressures of the village to the anonymity of city life. Technical change

has had great effects on highly industrialized societies other than the decline of church, family and village and the growth of industry and state. Only a few illustrations may be given.

*Agriculture*

For instance, agriculture is being mechanized. In the United States almost every type of agriculture cotton, corn, wheat, beets, sugar cane, fruit, dairying —employ machines using mechanical power in preparing the soil, planting, cultivating, harvesting and processing. This enabled the farmer to feed nine or ten persons in 1950 whereas, in 1800, seven or eight farmers were needed to feed one other person. Technological unemployment on the farms is solved, soon or late, by the absorption of the surplus rural population into urban occupations. Mechanization of agriculture has also raised the standard of living of the rural population greatly over what it was in the era of hand farming. Power machines have, too, been an added stimulus to commercial agriculture, necessitating the development of accompanying rural economic institutions.

*Labour*

Machines are a replacement or an adjunct to all kinds of labour in highly industrialized societies. For instance, there is no longer any heavy toil or back-breaking labour in such countries. Coal mining is done by machinery. Stoking furnaces which was very arduous toil is done by mechanical stokers using pulverized coal, or is replaced by the automatic flow of gas or oil. Bull-dozers clear land. Digging for building foundations is done by huge power-driven shovels. Loading cars and ships is done by power pulleys.

Light labour, which is repetitive and monotonous, is increasingly aided by power. Thus the assorting of objects of different sizes or colours is done by the electric eye, as is the counting or the selecting of defective products, e.g. cans passing by on the assembly line. In offices, electric computing machines reduce mental strain. The new electronics machines are incredibly speedy, multiplying in one-fiftieth of a second two numbers by as large a number of digits as is found in normal practice. These machines are said even to make judgments, if the problem is set properly, and they are also reputed to play a good game of chess. With fractionated motors, which may be no bigger than a pencil, and the electric eye, almost any small task, no matter how delicate, can be accomplished by mechanical means; jobs previously performed by small hands and big muscles are now accomplished by machines. At the same time more tasks are now becoming wholly automatic. These developments could bring unemployment, shorter hours of labour, more recreation, less fatigue and less muscular exercise, with varying effects upon health and conduct.

*Dependence upon Machines*

Men are becoming more dependent upon machines. When America was being settled, migrating man carried very few material goods—a gun, a knife, a piece of flint, a few metal utensils, a horse, a cart and occasional household goods. Now he is dependent upon a drug store, and medical supplies, paper in various forms, the clothing and household goods supplied by a department store, a dentist, a physician, ink, eye-glasses, a means of transportation such

as an automobile, railroad, or aeroplane. Migration today should be by communities (rather than individual man) linked to the outside source of supplies.

Even the man who stays at home uses more and more gadgets—radio, telephone, refrigerator, mechanical dishwasher, deep freeze box, can opener, gas furnace, sun lamp, television set, camera, motion picture projector, micro-film reader, phonograph, wire recorder, electric fan, air-conditioner unit, humidifier, desk, filing cabinet, typewriter, hair-waving set, garbage-disposal unit, electric washing-machine, tooth powder, a bottle of vitamins, an assortment of antibiotics, an automobile, and soon a helicopter.

Truly man's equipment is much more varied than that of the pioneer who penetrated the wilderness of America. This equipment increases his comfort and his capacities to do things, but it also increases his dependence. This vision of what technology is doing for man, particularly the man of the West, raises questions, particularly, from the man of the East, as to what is happening to his happiness, his peace of mind, his spirituality. These too are possibly affected by technology, and this effect should be made a subject of systematic study.

*The Standard of Living*

An outstanding social effect of technical change in modern industrialized society is the rise in the material standard of living of the population. The term, standard of living, is here used without any connotation of health, happiness, or morals; it is merely descriptive of the measure of material goods and services consumed. Its measure at any one time is the *per capita* income. The concept of the standard of living may be further illuminated by saying that the curve of the *per capita* standard of living of the general population, as measured by budgets over a long period of time, is similar to the curve of *per capita* income. And the curve of *per capita* income is similar to the curve of *per capita* physical production. It is, then, increased production that causes a rise in the standard of living of the masses over a long period of time.

In the United States the 50 annual incomes for a half century preceding 1936, measured in 1929 dollars, when added together equal about $3,100 billion. For any one year, say in 1886, if the total income be divided by the labour force of the year 1886, we get a measure of labour production in 1886. If this labour production of 1886 is multiplied by the labour force existing in 1887, we get what the income would have been if the productivity of labour had been the same in 1887 as in 1886. In a similar manner such a hypothetical income can be arrived at for each of the 50 years from 1886 to 1936. It is about $1,500 billion (the dollar valued as at 1929 [1]). In other words, if the production of labour had remained the same as in 1886, then the total of the annual incomes over the succeeding half century would surely have been about half as much as it was. The increased *per capita* income and the standard of living was then due to the increased productivity of labour.

But why does labour produce more? Labour works no longer and no harder. But better tools are used. One man with a mechanical cotton-picker, driven by gasolene, can pick in one day as much cotton as 23 men could pick by hand. The productivity of the labour in cotton-picking is increased greatly by the new cotton-picking machine.

This point is important because increased *per capita* income has great

[1] For these calculations we are indebted to the National Bureau of Economic Research of the United States.

significance. More money to spend means, potentially, more education, better health, and superior methods of achievement. Incidentally it may be questioned whether, if in the United States the total wealth had been redistributed in 1886 so that every one received approximately the same, the *per capita* income would have been doubled because of that redistribution.

Since the standard of living is so important another illustration may be given of its relation to technology. This illustration concerns the standard of living and the development of technology in five different countries. To express the state of technology we use the annual kilowatt hours (in hundreds) of energy *per capita* in each country. To express the standard of living, we use the number of minutes of labour skilled and unskilled in specified countries required for the purchase of a basket of consumer goods common to each country. The first line below gives the number of minutes of labour required and the second line the kilowatt hours.

| | *U.S.A.* | *U.K.* | *U.S.S.R.* | *India* | *China* |
|---|---|---|---|---|---|
| Cost of Living | 32 | 45 | 412 | 398 | 528 |
| Technical Development | 130 | 71 | 22 | 4 | 2 |

According to the table, when the cost of living is high the standard of living is low. As the technological development becomes higher, the standard of living is higher.[1] The relationship is impressive.

## SOCIAL PROBLEMS CAUSED BY TECHNOLOGY

We have now given several illustrations of how technical and scientific development in modern societies have affected various institutions and ways of living. It is now desirable to show that these technological developments bring with them serious disturbances, even though relatively short-lived.

### *Maladjustments*

A banker has defined an invention as that which makes my securities insecure. The holder of railroad stock suffered a loss in the United States owing to the rapid and extensive use of the auto bus, automobile and truck. Some railroads became bankrupt; others tore up their short-haul tracks, and the number of passenger-miles decreased. It has, of course, been long observed that labour-saving machinery creates pools of unemployment. Television in the United States has reduced the time spent on reading, causing concern to publishers, and has lowered the attendance at the moving picture theatres. The coming of cities along with the development of factories and railroads augmented crime, increased illness, decreased the stability of the family and created or intensified hundreds of other problems. The factory itself brought child labour, occupational diseases, long hours of labour, industrial accidents, and the degradation of labour.

Sometimes a development which seems wholly good brings evils. Thus, scientific medicine, sanitation and hospitals have lowered the death-rate, creating a differential between the death-rate and the birth-rate, thus leading to an ominous increase in population, in areas where the standard of living would be higher if the population density were less.

[1] A fuller explanation of these measurements is given in an article in the *American Journal of Sociology* for January 1951, by the author, entitled "Population, Private Ownership, Technology and the Standard of Living".

*Imbalances*

The phenomenon described by these illustrations of social problems that follow in the wake of technological and scientific advance may be generalized as follows. In a stationary culture made up of many interrelated parts there is a balance between the different parts. This balance is disturbed by a change in any one part. To restore the balance some adjustment must be made in the interrelated parts. The disturbed balance necessitating a restored balance is a social problem.

Thus the introduction of fast-moving hard metal machinery into production increased accidents among workers. To restore the imbalance it was necessary to pass and enforce laws requiring guards over the machinery and to provide automatic monetary compensation to workmen and their families for injuries received in the course of work. To illustrate further, scientific medicine destroys the balance between the birth-rate and the death-rate, which are usually the same. The balance can be restored by the reduction of the birth-rate through some method of controlling conception.

*Cultural Lags*

This generalization as to how an invention in one part of culture causes an imbalance with other parts of culture related to it may be supplemented by another generalization. There is a lag in time between the initial change and the change in the correlated part or parts of culture. Thus accidents in factories occur first. The laws to prevent them or to provide remedies for the distress come later after a lag in time. The death-rate falls first, the birth-rate later. The automobile, the auto bus and the truck come first; only later do the railroads adjust to them. Sometimes the delay is very long indeed. The family has taken a very long time to adjust to the factory system and to the cities which followed. Indeed, it may be questioned whether the family, after a century and a half, has made a satisfactory adjustment. The ideologies of religion have taken a very long time to adjust to the discoveries of science. Thus, dietary prescriptions made by religious leaders living in a simple pastoral or agricultural society of 2,000 years ago are followed in an era of scientific nutrition with its exact knowledge of food values.

That the accumulation of such cultural lags is large follows logically when we know that mechanical inventions every decade number many thousands. Sometimes a removal of cultural lags occurs on a large scale as a result of wars or revolutions. Obviously a more rational method is needed.

*The Future*

Most of the discussion has concerned the present or the relatively recent past, but technological development will continue into the future; the curve of inventions will continue, and it is likely to be a rising curve, with possible undulations. Technology urges us to look to the future rather than to the past. But to look forward is not enough. Looking to the future should be accompanied by the pursuit of science and research, particularly in the social sciences, and the knowledge gained by scientific researches in the social sciences should be applied in education and social action based on this knowledge.

*Reporting Inventions*

The steps recommended are the following. First, there should be an annual census of mechanical invention and discoveries in applied science. There is some annual reporting now but it is fragmentary, medical progress being the most fully reported. A selection should be made of these records—which would be quite extensive—based upon estimated social significance. In this type of report on research and invention, it is soon seen that each invention has a history. It takes, on the average, some 25 to 30 years for an invention to mature enough for extensive social use.

*Forecasting Inventions*

Secondly, there should be some attempt to forecast inventions and scientific discoveries, though such forecasting should for practical reasons be confined to important inventions, such as television. The possibility of forecasting depends on the length of time required for an invention to be developed—there is usually time to foresee developments.

*The Uses of Inventions*

Third, the various uses of inventions and scientific discoveries should be explored. The inventor himself does not always know, as was the case with Edison and the phonograph, all the uses to which an invention will be put.

*The Impression of Invention*

Fourth, the time required for an invention to be used extensively by enough consumers to produce an impact on society should be estimated in respect of important inventions. Cheap costume jewellery, for instance, does not help to modify the distinction between social classes until its use becomes widespread.

*Foreseeing Social Effects of Invention*

Fifth, there should be attempts to foresee the possible social effects of important inventions, both in their diversification and in their derivative influences. Thus, effects of the aeroplane could be foreseen on agriculture, cattle raising, education, medicine, the distribution of population, marketing, trade, manufacturing, railroads, shipping by sea, exploration, scientific research, archaeology, metereology and war.

It is particularly desirable to study the derivative effects in advance. It could be foreseen, for example, that the aeroplane would modify the nature of trench land-warfare, that it would decrease the power of navies, that war would be brought to civilians, that the ranking of military states according to power would change, that the differential between small and large powers would increase and that isolationism as a foreign policy would be broken down.

*Studying Adjustment to Invention*

Sixth, the problem of speeding the removal of lags in the adjustment to an invention whose effects are forecast should be extensively investigated

in respect of important inventions that will have profound, far-reaching effects. The removal of a cultural lag in making a new adjustment often requires a social invention as well as change of attitudes. Thus, given the percentage of elderly childless persons in the population and the diminution of the large family and of family feeling in cities, the social invention of old age insurance and its spread could be speeded.

*Action on Lagging Adjustment to Invention*

Seventh, after proposals for removing lags have been devised by planning, it remains to attain the organized effort necessary to do so. Sometimes this effort seems impossible. Suppose, for instance, that the adjustment to the atom bomb lies either in the deconcentration of urban populations or in the abolition of war. The task in either case seems so stupendous as to make either of such adjustment appear to be unrealistic. Nevertheless lags are being removed in the course of time. But could they not be removed sooner? So urgent is this need that a moratorium on inventing and physical research has been proposed to enable the social sciences to catch up.

*Organizations Needed*

To attain such objectives as those just listed the necessary research agencies in social science need first to be organized. But the funds are lacking to support social sciences research. The need of money for research in the physical sciences is much more widely recognized. There is also the need to develop the conception of science in the social disciplines. Too often so-called research is biased by social philosophies, prejudices and wishful thinking, with inadequate reliance on measurement and objective description. It will also take time to build up a personnel with adequate training in truly scientific methods in the social sciences. There must also be developed an attitude towards dealing with the future, as is gradually being done outside research institutions in the practical field of planning. A willingness to look forward and to deal with probable future developments is of great importance, an attitude which is more common in the business world than in universities. We also need magazines and journals devoted to researches on the future.

*Inventions of the Future*

The future will see increasingly the development of new inventions, with the good that they will bring, and with the dislocations and maladjustments they will occasion. Even with our limited vision, we can see great changes ahead due to such inventions and scientific discoveries as nuclear energy, man-made rainfall, artificial climate indoors and outdoors, the creation of new molecules and new atoms, chemical fibres, transparent plastics, the synthesis of vitamins, of amino-acids, of hormones and of cholorophyl, television, rockets, helicopters, the wire recorder, talking books, micro-card books, synthetic clothing, belt-line transportation, the electric eye, radio point-to-point telephone, artificial insemination, and atom bombs.

As inventions increase, there will be more social changes, and more maladjustments. Action on a huge scale is urgent, if even a small realistic beginning of planning and control is to be achieved.

# SOCIAL CONSEQUENCES OF TECHNICAL CHANGE FROM THE SOCIOLOGICAL STANDPOINT

WILBERT E. MOORE

Technical change occurs in all societies, but its form and tempo present a very wide range of variation. It is only in relatively industrialized societies that continuous and rapid technical innovation is both characteristic and institutionalized.

So marked, indeed, is the emphasis on technical change in industrial societies that many writers, at least since Marx, have considered technology as a sort of first cause for all sorts of changes in the social structure as a whole. This theoretical position is easily disproved if applied to all times and places, but it has a certain restricted validity under the special institutional features of industrialism. The very emphasis on efficiency and the rational, instrumental view of the world, characteristic of industrial modes of production, obviously foster technical innovation. At the same time, the marked separation of productive activities from other features of social life has encouraged technical change with slight regard for social consequences.

It is the principal purpose of this essay to note some of these social consequences, first within the productive system itself, and then with reference to the general structure of modern society.[1] The discussion is primarily relevant to highly industrialized societies. Even graver issues are at stake in societies just beginning to adopt modern modes of production.

## TECHNICAL CHANGE AND THE SOCIAL ORGANIZATION OF PRODUCTION

The most immediate and apparent social consequences of technical change are those within the productive system. For purposes of simplicity these consequences may be viewed as falling within two general categories: the impact of technical change on occupations and their distribution, and the significance of technical change for the social system of productive enterprise.

### *Occupational Structure*

Technical change is often viewed as the process of replacing men with machines, and this is indeed one aspect of the remarkable productivity per man-hour in the industrial system. Mechanization of many productive processes adds greatly to the efficacy of human effort, and makes possible some types of production—apart from volume—hard to imagine without mechanical power.

It is this process of replacement that has given rise to debates over technological unemployment. The dispute about the net effect of technical innovation on the general level of employment simply cannot be settled without

[1] Most of the ideas expressed here have been more fully discussed and documented elsewhere by the author. See especially *Industrial Relations and the Social Order*, rev. ed. (New York: The Macmillan Company, 1951), Chaps. IX-X, "The Worker and the Machine", and XXV, "On the Stability of the Industrial System"; *Industrialization and Labor* (Ithaca: Cornell University Press, 1951), Chap. VIII, "The Social Setting of Labor".

attention to the condition of the economy and the social structure. Although the minimum effects on occupational structure and employment do not require specification of the net general effects.

Mechanization of productive processes generally has the following effects: displacement of some workers, who will ordinarily undergo at least some period of frictional unemployment; if re-employed the displaced workers must generally enter different occupations; the workers in the mechanized unit will have substantially altered occupational roles, some of which may require higher rather than lower skills and responsibilities.

The impact of technological change on the occupational structure is in short far more complex than is commonly portrayed in discussions revolving around the problem of displacement. It is perhaps useful to appraise the relationship with respect to three closely related processes: the changing relationship of the worker to the machine, increasing specialization and diversification of occupations, and the changing demand for skills with attendant problems of obsolescence and occupational mobility. These three processes are discussed briefly in the following paragraphs.

1. The servitude of the factory worker to the machine is a favourite theme of commentators on the industrial system, and despite the serious tendency to exaggerate the problem—both by overstatement of the effects of routinization where it exists and by neglect of the occupations that do not fit the stereotype—there is certainly a stage in the process of mechanization when some workers are assigned repetitive tasks at a tempo set by machines.

   Again the whole industrial system rests upon a considerable degree of routinization, at least in the broad sense of servitude to the clock. This arises from the necessity of co-ordinating specialized activities in the business unit. Among workers without industrial traditions even this minimum of temporal regularity is offensive, and in modern occupational structure the sense of personal disposition of time may be regarded by some individuals as of more importance than the total work period.

   The effects of extreme routinization on the worker have been more debated than carefully studied. It is assumed that such tasks have small meaning to the worker, particularly since their relation to the final product is commonly fractional and often little understood. However, some students have suggested that workers at repetitive tasks do not show the expected frustration and apathy, and may indeed welcome the sense of psychic freedom permitted by the lack of necessity for thought and decision.

   Two aspects of extreme routinization as a consequence of mechanization require comment. The one is implied by the reference above to a "stage" in the process of technical change in production. Precisely in the degree that work assignments are simplified and made repetitive they are likely targets for further mechanization, which may eliminate this type of manual intervention entirely. This later stage of mechanization, not uncommon in some mass-production industries, requires far fewer workers, but requires workers who are once more in a sense masters of the machine. The second aspect of machine-oriented routinization is a process behind the scenes: the increased importance of engineers, draftsmen, and skilled mechanics in designing, installing, and keeping in operation the complex mechanical equipment.

2. Reference to occupational changes lying behind the obvious impact of technical change on manual workers in the shops leads to a consideration of the general process of specialization and diversification of occupations. The relationship between technical change and occupational specialization

is partly direct and partly indirect. The direct connexion is illustrated by the new occupations and subdivisions of occupations required by the development of new products and new productive techniques. The indirect connexion arises from the increased size of units and the development of all sorts of administrative, technical, clerical, professional, financial, and distributive services.

The implications of these developments are far-reaching and cannot be adequately explored here. A few points may be singled out for brief comment.

Within the manufacturing enterprise there has occurred not only an elaborate development of specialities, but also a major shift in broad occupational structure. Among manual workers, the number of jobs requiring sheer muscular strength is steadily diminishing. The unskilled category is a declining portion of the total labour force, and there is some indication that the minimum capacity required even for the least skilled positions is rising—particularly with regard to literacy and mechanical aptitude. At the same time, there is a tendency for the skilled artisan to be replaced by the engineer or other technician on the one hand and the semi-skilled machine tender on the other. These processes, when joined with the growing numbers of supervisors and staff specialists of all sorts in the industrial establishment, mean a smaller proportion of the total personnel of the enterprise who can rightly be called productive workers.

The significance of this change is enhanced by the further circumstance that a growing proportion of the total labour force is not directly concerned with physical production at all, but with a steadily increasing range of services that are either new or newly transferred from the family and community into the market. The rationalization of the production of services has mainly escaped the notice of students of the industrial order largely because of their preoccupation with the factory system. This rationalization has had effects analogous to those in manufacturing, with the subdivision and routinization of some tasks (as in many clerical operations) and the greatly increased demand for advanced technical training for other tasks (as in administrative and professional positions).

Thus on net balance the impact of technical change on occupational structure has not been to reduce the demand for skills but rather to increase it. However, the impact on the individual worker must be distinguished from the effect on the total labour force. And the individual worker with highly specialized skills is likely to be adversely affected by technical innovation.

3. The obsolescence of skills is one of the hidden costs of technical change—hidden because it is customarily borne by the individual worker and his family rather than by the producer and consumer. A persuasive ethical argument can be made for placing all the financial costs now borne by the individual and the community in the same category as those considered by the entrepreneur. The ethical argument with regard to the worker is given practical support by the principle of optimum utilization of labour resources. The older worker who is displaced or downgraded because of technical change requires both occupational guidance and retraining if he is to make his maximum contribution to the economy.

With the increasing average age of the labour force characteristic of most industrial societies today, the problem of obsolescence of skills takes on added significance. In the past the supply of new skills was largely supplied by young entrants to the labour force. With younger workers

representing a smaller proportion of the total, the flexibility of industrial economies may be seriously impaired unless changes are made in the organization of training. Both from the point of view of the older worker and from that of the economy as a whole, some skilful social invention relating to occupational mobility and retraining would seem to be indicated.

*Productive Organization*

The foregoing comments on changes in the occupational structure related to technical change have some further implications for the social organization of the productive unit. For example, it would appear that both labour and management are increasingly heterogeneous occupationally. Indeed, the line between the two is likely to be blurred by occupational shifts such as that between artisans and engineers and by the rationalization of occupations traditionally considered managerial.

Elaborate specialization of occupations within the enterprise has involved continuous and often rapid change of the details of organization. Lines of communication and authority, and even the composition of the work group, may be changed in a manner and at a speed that appears arbitrary to the individual. These circumstances necessarily place serious strains on the cohesiveness of the productive enterprise as a whole. It does not follow that the tendency to cleavage within the organization will always follow a particular line—say that between management and labour. It does follow that attention to the problems of organization itself is of growing importance in the modern industrial enterprise. Nor are these problems seriously affected by private or public ownership. They appear to be intrinsic to the industrial mode of production—a by-product of primary concern for rational utilization of resources, including human resources.

The elaborate and indirect lines of communication, emphasis on physical rather than social principles of spatial arrangements, impersonality, tenuous relation of workers to product and to fellow workers—these characteristics of modern industry raise problems concerning the limits to the development of efficiency.

An appraisal of these problems must be largely theoretical and speculative in the absence of adequate research. Most of the solutions offered for the depersonalized demands of work emphasize out-of-work activities and affiliations, or organizational gadgets like counselling, indoctrination, improved communications in the cognitive sense, grievance machinery, and so forth.

The question raised here, but not answered, is whether it is necessary and appropriate to have a deliberate recognition of the social components of the work situation. Such recognition might lead to spatial rearrangements, toleration of non-competitive production standards, and possibly even an inefficient reduction of specialization and routine in order to introduce elements of control and decision into the worker's job.

It is just possible that such changes might result in increased net efficiency and productivity. For example, there is no evidence to determine whether certain kinds of technically inefficient work assignments would cost more than is spent by the enterprise on personnel administration and human relations. Similarly, there has been very little study of the costs in apathy or personnel turnover of extreme specialization dictated by the purely rational model of organization.

There is of course a considerable body of materials indicating that workers do in fact form informal groups, set maximum production rates, and otherwise

violate the canons of industrial enterprise. There is also some indication that productive efficiency may be better achieved if these circumstances are slightly modified and adjusted to, rather than combated. The essential question remains whether adequate attention has been given to the social costs of technical change within the enterprise. The stability of the industrial system as a whole may depend upon more adequate combinations of technical and social engineering as a continuing process, in place of difficult adjustments to unexpected consequences of technical innovation.

## TECHNICAL CHANGE AND THE INTEGRATION OF SOCIETY

Industrial societies are remarkably fragile systems. Part of this fragility is fairly obvious; part of it is subtle and its degree unknown. For example, there is an obvious relationship between specialization and co-ordination, with the consequence that any damage to the latter impairs or destroys the operation of the system as a whole. Thus interruption of complex transportation and communication networks would bring an industrial system to a grinding stop. Whether such interruptions arise from the wartime activities of an enemy or from internal industrial disputes, the consequence pointedly illustrates the risks accompanying the gains of specialization and interdependence. A village-centred agrarian economy offers slight chance for the production of modern instruments of warfare, but paradoxically a much smaller risk of economic chaos as a consequence of military action.

The phenomenon of rapid technical change naturally poses intrinsic problems of social integration—of adjustment, containment and reaction. The subtler aspects of the fragility of industrial systems are discussed below in terms of static structural relations, which are partly the consequence of past technical changes, and in terms of the effects of continuous change on those relations.

### *Problems of Integration*

The problems of integration of industrial societies may be approached in terms of two interrelated aspects—the relations between systems of social action (that is, organizations) and the relations between elements of the normative system (that is, institutions).

Unlike most productive systems, the industrial mode of production entails both a temporal and a spatial separation of work from most other meaningful aspects of social existence. Work relations are not typically formed on the basis of kinship or friendship, and often not even residential proximity. Industrial recruitment has necessarily rested on impersonal judgments of technical competence. The effects of technical change on rationalization of job specifications and on the scale of units serve steadily to increase the importance of this functional requirement. The co-operation that is essential to the productive system becomes a mechanical process of interdependence, bought with wages, rather than a social process of joint activity toward shared goals.

Except for labour unions and professional associations, few of the worker's group memberships have any necessary or intrinsic relation to his work. Even the occupational associations tend to be formal, limited-interest groups, en compassing a relatively small range of the individual's activities.

This structural specialization and the attendant discontinuities are perhaps most extremely represented in the modern city. Technical change has both

fostered and fed on large urban concentrations, with their tenuous hold on the individual's behaviour and loyalties. Spatial and occupational mobility require severing of most kinship bonds, including those between the generations, except those of the small-family system of parents with young children. Other groups that treat the individual as a whole person—as who rather than what—have been even more vulnerable to the impact of industrialism. The result has been the growth of formal secondary means of social control, a frequent pressing attrition of the individual's commitment to social norms, and a serious strain on the organizational links between family and nationalistic loyalties.

The historical and contemporary coincidence of industrialism and nationalism is certainly not accidental. The latter offers one of the few socially approved outlets for emotion, which is likely to be actually disruptive in most specialized associations. At the same time, political movements that offer to integrate the individual's life, to combine his social roles and provide an opportunity for emotional allegiance, have had an unmistakable appeal among apathetic and disaffected industrial workers. Such retreats from rationality and promises to restore meaning and order to social life constitute a serious challenge to the traditional liberties and freedom of association provided by democratic institutions.

The sources of strain within industrial societies may also be approached in terms of the normative system.[1] The industrial mode of production demands in high degree that relations among individuals in the productive process be functionally specific—that is, limited to the technical demands of the occupational role; universalistic—that is, based on criteria possibly present in any segment of the population without regard to previous social relationships or membership in irrelevant groups; and rational and impersonal rather than affective or sentimental. At the same time, these expectations could not apply throughout all phases of society. Other essential social functions—and production is only one—rest in large measure on diffuse, personal, and emotional relations. Between the two systems of expectations there are many sources of difficulty. For example, the intrusion of ethnic, class, or even family loyalties is in some measure disruptive of industrial organization. By the same token, the intrusion of rational instrumentalism in the formation of friendships is likely to be disruptive of that relation.

Again, continuing technical change tends to accentuate these strains, by increasing the difficulty of maintaining a balance between two sets of demands on the individual and the radically different kinds of roles he is called on to play. Changes in occupation and work organization, introduced in the interest of efficiency, may undermine precisely those growing social relationships that added meaning to the work situation while being technically in violation of the normative system.

*Proposals for Integration*

In view of the problems just indicated, which though commonly recognized have been considered from various points of view, a number of proposals for healing or patching up the strains in industrial societies have been made.

One type of solution proposed is addressed to the environment of industrialism in the sense of location and community activities. Thus it has

[1] In this connexion, see Talcott Parsons, *Essays in Sociological Theory* (Glencoe, Ill.: The Free Press, 1949), especially Chap. XII, "Certain Primary Sources and Patterns of Agression in the Social Structure of the Western World".

been argued that some aspects of technical development itself, notably in the efficiency of production and transportation of electrical power, make decentralized light industry possible, particularly in the production of consumer goods for local markets. Similarly, modern techniques of community planning may make possible a closer integration of residence, work, recreation and social life generally.

By and large the enthusiasts for decentralization argue their case explicitly on economic grounds, while implicitly appearing to want certain kinds of social relationships even at the risk of loss of productive efficiency. It remains true that certain types of production require a very considerable scale of operations, in part because of the cost of transporting goods in various stages of manufacture. It is also true that there is a strong economic necessity for the concentration of some kinds of commercial, financial, and similar services. However, it may be that bigness breeds bigness, and that dispersal of physical production might reduce the need for urban concentration.

Another type of solution proposed for problems of integration is the careful study and development of voluntary associations which may encourage loyal participation of members without introducing fundamental cleavages in the social structure. The problem here is that if such associations are closely linked to occupational roles they lend themselves to totalitarian integration. If they are not so linked, they may have little efficacy in the individual's life organization. His freedom in the industrial system precisely depends upon the existence of alternatives and the possibility of choice in his social relationships. The choice seems to rest among relatively unsatisfactory alternatives, because in modern society it is not only the business enterprise that is marked by narrow and tenuous bases of interest and participation. This line of argument leads by a different route once more to the local community as possibly the most effective cushion to the impersonal, truncated, and changeful aspects of modern work situations. It is not a simple or automatic solution, and may not even be one. It is perhaps worth exploration and social invention.

## NEEDED RESEARCH AND TRAINING

Much of the foregoing discussion has been frankly speculative, as neither the empirical research nor systematic theory exists that would be necessary for a definitive statement. At several points explicit comments have been made about needed research. Since there are also many other points at which the same comment might have been made, it may be useful to summarize certain aspects where research and training are needed for comprehension of complex processes and their control.

### *Analyses of Industrial Structure*

Despite the recency of really large-scale industrial enterprises, their organization has to a remarkable degree been taken for granted. It is true that schools of business administration and some social scientists have attempted to study some aspects of industrial organization and administration, but scant attention has been given in these studies to the organizational consequences of technical change.

Several specific recommendations may be hazarded.

First, it would seem appropriate to examine carefully and possibly discard such dichotomous classifications as primary and secondary groups, formal and informal organization, and management and labour.

The industrial organization is commonly classified as a "secondary" group as contrasted with the family or children's gang as primary groups. But the work organization, unlike the club or other voluntary association, provides all the essential conditions for primary group formation: continuous, face-to-face contacts among relatively small numbers of persons.

The "informal" organization that is growing and spontaneous in the work situation, in departure from or direct violation of normative expectations, may itself gain normative sanctions and in that sense become formal. This process may be obscure and may also render difficult the study of the minimum components of a viable social system in the face of technical specialization and change.

At least since the time of Marx the common assumption has been made that one potential line of cleavage in the industrial system was more fundamental than others—that between capital or management and labour. The growing complexity of occupational specialization, including many groups difficult to classify on this assumption, casts serious doubt on the general utility of the division. In any event, one of the consequences of technical change requiring extensive analysis is the pattern of occupational relationships and cleavages.

Second, social scientists would seem well advised to pay increased attention to studies taking into consideration the true factor. It is often said that the social sciences lack a generalized theory of social change. To the extent that this is true, the explanation of course lies in part simply in scientific immaturity. However, it may be fair to say that custom and fashion have also had an influence—the search for empirical regularities and structural connexions in the immediate present has been pursued to the neglect both of historical data and the possibility of continuous or repeated studies in an area of observation. Technical changes are continually being made and, not withstanding the increasing difficulty as more and more indirect consequences are traceable in the absence of experimental constancy of relevant conditions, some observations of effects through time can be made. The state of dynamic theory is not so elementary as to provide no hypotheses concerning changes and their consequences.

Third, it is possible that certain limited experimental studies can be made. Any attempt at deliberate control of conditions in order to study the effect of a particular variable must take into account the purposive character of human activity. This circumstance presents a major challenge to methodological ingenuity to avoid the fulfilment or defeat of an experiment by virtue of the purposive intervention of the objects of study rather than as a consequence of the variable presumably tested. Granting this difficulty, it remains true that crude trial and error experimentation is going on constantly in industrial organizations, and both the design of experiments and interpretation of results would benefit by the careful participation of social scientists.

*Studies of Morale and Value Integration*

A number of studies have been made of the relation of worker morale to productivity, although some of these have actually defined the former in terms of the latter. There are a number of meanings attached to the term morale, and only a few studies have been directed to a study of the relations

among a number of operational definitions—for example, productivity, verbally expressed work satisfaction, absence of apparent tensions and frictions. The relation between job performance, however defined and measured, and the degree of integration with the values of the community and society, have scarcely been studied at all.[1]

It is not possible to predict the cohesiveness of modern societies under severe stress—such as prolonged depression or military defeat, without some notion of the degree to which there are common ultimate values meaningfully related to the individual and reinforced by the expectations of those persons with whom he has affective ties. The multitudinous lines of division among large organizations and interest groups, and the segmented roles of the individual, suggest the possibility that the system as a whole is held together by a few frayed threads. Present knowledge neither confirms nor denies such a conclusion.

*Comparative Studies of Industrial Systems*

For the most part, systematic comparison is the social scientist's substitute for laboratory experiment. The substitute is often a poor approximation, because with a multitude of variables the natural experiment is rare and proof of relationships is thus likely to be incomplete. Moreover, the true experiment allows the observation of relationships never encountered in nature, whereas the comparative procedure is limited to circumstances as they exist or have existed without the intervention of the observer.

However, there is now a considerable range of experience in industrial societies relating to the form, tempo, and consequences of technical change. Moreover, to the extent that processes and patterns are repeated, the contemporary industrialization of undeveloped areas may offer further evidence. The variability of conditions cannot be neglected, but may be taken into account without making all generalization impossible. In fact, comparison of historic experience in the older industrial economies with recent and contemporary experience in other parts of the world suggests some similarities if not uniformities.

Two variable circumstances may be noted, which are in principle somewhat compensatory in their effects, but which cannot actually be appraised from existing knowledge. The first of these is that the technical experience accumulated in the oldest industrial economies would seem to permit a greatly accelerated rate of development elsewhere. The second circumstance is the expressed desire of many persons in undeveloped areas to avoid or reduce the untoward effects of technical change in the West. It is almost certain that these two circumstances cannot be resolved without sacrifice, and quite certain that part of the harmful effects are intrinsic. Careful study of past experience, perhaps mixed with some experimentation, may however produce stable combinations not yet tried. If the prospects for complete success are not very hopeful, the addition to our knowledge might still repay the effort.

[1] A colleague, Professor Melvin M. Tumin, is developing the research design for such a study.

# ECONOMICS AND THE SOCIAL CONSEQUENCES OF TECHNICAL PROGRESS

JEAN FOURASTIÉ

For economic science, technical progress is a new problem. The object of the present article is to indicate, firstly the extent to which men arestill uninformed as to the economic and social consequences of technical progress, and secondly, the methods and types of research which would serve the development of this new branch of social science. In this process, it will be easy to show how essential such research is to a proper balance of individuals and nations, to human progress, and to world prosperity.

Technical progress has certainly had its historians, and some of them are among the greatest names in the field of social science. Werner Sombart, John Hobson, Thorstein Veblen, Lewis Mumford, Abbott Usher and, more recently, Gilfillan and Giedion have all—for different reasons and from different points of view—carefully studied the history of techniques, described the stages in their development and shown the effects of their application on the legal, economic and political structure of society, as well as on thought, art and civilization.[1] These studies undoubtedly constitute some of the most substantial and fruitful undertakings in the field of the social sciences. But they cover a sector rather different from that which we wish to discuss here; for even when these authors have, like Sombart and Hobson, given their work a title indicating the economic aspect of their subject, they have dealt with it mainly from a sociological standpoint. They are chiefly concerned with the influence of the machine on human beings and social institutions. We here, however, are concerned with the effects of technical evolution on economic facts—the distribution of the working population among the various professions; the structure and volume of national production; income; profits; international trade; the evolution of prices; economic crises; unemployment; the structure and volume of consumption; and the standard of living and purchasing power of the wage-earners.

We are in fact in the presence of the birth of a new branch of economic science, whose object it will be to study the effects of technical progress on economic evolution on a long-term basis. Such a study will, incidentally, be of profit to short-term economic science, for I doubt whether a genuine short-term science is possible without at any rate some idea of the long-term problems. To me, therefore, the assertions of the apostles of economic statics are no less strange than would be the efforts of doctors to understand and treat pregnancy without knowing that it leads to childbirth.

[1] Sombart, *Der Moderne Kapitalismus*, Munich, 1927. Hobson, *The Evolution of Modern Capitalism; a Study of Machine Production*, London, 1926. Veblen, *The Theory of Business Enterprise*, New York, 1905. Mumford, *Technics and Civilisation*, New York, 1934. Usher, *A History of Mechanical Inventions*, New York, 1923. Gilfillan, *The Sociology of Invention*, Chicago, 1935. Giedion, *Mechanisation takes Command*, New York, 1950. See also Sh. B. Clough, *The Rise and Fall of Civilisation*, New York, 1951.

It is in any case, odd that, despite men like Sombart and Hobson, humanity should have been so long in discovering the strictly economic consequences of technical progress. Several of the problems here at issue are of the deepest concern to mankind and are most frequently in the forefront of social strife: what are the causes and circumstances of a reduction in the number of working hours, the raising of the school-leaving age, unemployment, crises and, particularly, fluctuations in the purchasing power of wages—that purchasing power for which men do not hesitate to strike, revolt, and even go to war?

Only slowly and laboriously have men discovered that, in these matters, it is the effect of technology that is preponderant. The history of this discovery can be divided into three successive stages.

The first stage was that characterized by the idea of industrial revolution. The central idea of the second stage was that of the conditions of economic progress. As I see it, however, the new science assumed concrete shape only during the third stage, characterized—it is quite recent and is indeed, perhaps, only at its inception—by the stress laid on the measure of technical progress (the productivity of work), and then by the discovery of the varying effects of technical progress, in the different sectors of the economy. It is this stage that fully reveals the repercussions of technical progress on economic revolution as a whole, on the structure of prices and, consequently, on the purchasing power of the wage-earners and on the standard of living of the various peoples.

## THE IDEA OF INDUSTRIAL REVOLUTION

Although the first stage was one in which the knowledge acquired was of a fairly general nature, it was none the less important, as it introduced the idea of technical progress into the actual analysing of economic facts. The originator of this movement was Karl Marx;[1] but as there was practically no one immediately to carry on his work on the plane of experimental science, further developments in this mode of economic analysis had to await the year 1906, when Mr. Mantoux, professor at the Conservatoire des arts et métiers, published his well-known book *La révolution industrielle du XVIII^e siècle*.[2] This relates mainly to the period 1830-80, when steam and power derived from coal were first utilized in industry. Reading the lectures given by this author at the time, we have the impression that he regarded the Industrial Revolution as having closed at the end of the eighteenth century, the main task thereafter being to digest its consequences.

This characteristic analysis of the Industrial Revolution, which was quite a novelty for the period, consisted in showing that there had been a break in the continuity of the world's history and that economic science should take that break into account; that one could not expect to apply the same general rules and find the same machinery and the same states of equilibrium in the world of 1910 as in that of 1810. In one respect—that of economic power, the productive capacity of a nation—the idea of industrial revolution had a special influence and became one of the classical elements in economic analysis. From 1910 onwards it became quite clear that a nation's productive capacity depended on its industry, and hence on its political power.

Later, the idea of industrial revolution was given a broader and more subtle meaning. It is now taught that there was not simply one industrial revolution which came to an end towards 1880, but a series of revolutions in which we are

[1] Karl Marx, *Das Kapital*, Zürich, 1867.
[2] Paul Mantoux, *La révolution industrielle du XVIII^e siècle*, Paris, 1906.

still engaged—the first being that of coal, the second that of electricity and oil, and the third (still in its initial stages) that of atomic energy, not to speak of other secondary (so to say), but nevertheless very important revolutions, such as the substitution of steel for stone as a normal building material, the use of cement, the appearance of plastic materials, etc. Thus, at the present time, there is a tendency to replace the idea of industrial revolution by a more elastic and more general idea—that of a transitory period between two states of equilibrium, a former equilibrium (that of the pre-1800 world) and a new one towards which the world seems to be proceeding. This future equilibrium will not, of course, be absolutely stable, any more than that before 1830 was; nevertheless, the upheavals will most probably affect humanity less seriously than do those of today, because men will have less need than they have had during the past hundred years to transform their way of life, their professional activity and their habits by abandoning agriculture for industry, the country for the towns and the Virgilian atmosphere for the atmosphere of destitution surrounding the proletariat.

## THE TECHNICAL CONDITIONS OF ECONOMIC PROGRESS

Although he assigns only a very small place to technical progress proper, and althought his idea of productivity is something financial or even monetary, but not technological, Mr. Colin Clark[1] has played one of the main roles in the second stage—the discovery, by economists, of the influence of technical facts on economic facts. He has had the merit of stating in broad terms the problems of long-term economic evolution and of international comparisons; and it is precisely because he does not solve all of them satisfactorily (it was indeed beyond his power to do so) that he has opened up a fertile field for other research workers.

This has been of great advantage to the study of technical progress. Works such as those by Messrs. Kuznets, Fabricant and Sauvy[2] have brought to light an important series of fundamental relationships.

Prominent among these relationships is that obviously existing between the technique of production and the number of working hours. It has became clear that it is technical progress which permits a reduction in the number of working hours, not only for adults but also for children and young people. Technical progress enables a man not only to work less hours per year but, what is even more important, to work for a smaller number of years throughout his lifetime. Thus it is possible, on the one hand, to raise the school-leaving age and, on the other, to lower the retiring age. This benefit is obtained at the expense of production; but as soon as technical progress gives any people a measure of production which enables consumption to be raised above mere bodily needs, that people desires rather to reduce the number of its own working hours than to increase its consumption.

At the same time, men have begun to understand that the phenomenon which was previously called (more particularly in France) the depopulation of the country-side and ascribed mainly to moral causes, is closely connected with technical progress. As technical progress makes it possible to obtain an increasing volume of products from the soil, it is obvious that, as soon as a certain level or progress has been attained, a people can no longer absorb

[1] Colin Clark, *The Conditions of Economic Progress*, London, 1940.

[2] Kuznets, *National Product since 1869*, New York, 1946. Fabricant, *Employment in Manufacturing*, New York, 1942. Sauvy, *Richesse et population*, Paris, 1947.

this increasing quantity of food, unless it finds foreign markets through external trade; and this gives rise to an agricultural crisis, i.e. a drop in agricultural prices, the consumers using their purchasing power for other purposes. The demand for agricultural products of which there is a glut is replaced by a demand for products which were formerly produced only on a small scale or not at all. This causes a drop in agricultural prices as compared with wages; and that explains why the peasants, although they continue to cultivate the field which they have always cultivated, and although—or rather, because—they obtain from this field more than they obtained formerly, find themselves ruined and obliged to abandon agriculture for industry. This is a phenomenon which, from the individual point of view, is particularly paradoxical and striking: you are a peasant; you live on the land of yours fathers and forefathers; not only do you cultivate the same land as they did, but you cultivate it better than they; you have better tools, fertilizers and seed; consequently, where they produced say 24 quintals a year, you produce 30, 32 or 34; yet you are brought to ruin. Although this phenomenon is astonishing from the individual point of view, it is readily understandable from the collective point of view: it is precisely because you are not alone, and because numbers of other peasants are in the same case as yourself and offer the nation not simply the 80 million quintals of wheat it needs, but 90, 100 or 110 quintals, that the consumers refuse this wheat. The price of wheat falls and you find yourself ruined if you live on marginal land, that is to say if you are one of those peasants, who were formerly necessary for the production of the 80 million quintals, but who are no longer necessary now that the country produces 110 quintals.

In other words, technical progress gradually ruins the peasants, but it naturally ruins the poorest of them first. The richest peasants—those who work the richest land—are less severely hit, and they continue to produce. What does this mean? It means that the income from the land diminishes, and diminishes for all concerned. In the case of certain land it is reduced to zero and the peasant is ruined in the true sense of the term. What is true of agriculture is also true of all other kinds of production. Transfers of the working population from one profession to another are thus governed by the combined effets of technical progress and of the saturation of consumption.[1]

In describing this phenomenon of the transfer of the working population from agriculture to other professions over the last 100 years, we have introduced the idea of crisis. Technical progress has caused the abandonment of the country districts through an economic mechanism known as a crisis; and we see that the effect of the crisis, as well as the only remedy for that crisis, is precisely the depopulation of the country districts, and hence that the idea of crisis is closely related to that of the migration of the working population. This is a new and very important idea. It is far from being known and even further from being understood, although it must be obvious to those who have read what has been written above. It must give rise to a whole series of concrete studies with a view to showing the effects of crises on the numbers of workers employed in the various professional callings. It will be found that crises are the mechanism which obliges the working population to abandon the primary for the tertiary occupations. Such research will provide the solution to the crucial problem of the struggle against crises: the remedy for crises, indeed the way to avoid them, is to guide the working population in the right directions beforehand.

Certain economists had claimed that crises, whose precise origin was

[1] Cf. *Le grand espoir du XX^e siècle*, Chapter III.

unknown, were connected with individual ownership of the means of production; they thought that the only way of overcoming them was to abolish private property. But what we have said shows that this is not so, for even if the land were collectively owned it would still be necessary to transfer the working population in order to avoid agricultural crises; in other words, it is a problem, not of the ownership of land, but of the distribution of the workers. The régime which copes most effectively with crises is not one that abolishes ownership, but one that transfers its working population at the right time. It is thus that the Soviet régime, whether consciously or not, has avoided crises; it is not because it has abolished private ownership of land, but because it constantly transfers its peasants from agriculture to industry without waiting for the symptoms of an even relative agricultural over-production to appear. It is quite possible to transfer the working population without altering the system of private property; but this is something that remains to be done.

## TECHNICAL PROGRESS AND ECONOMIC LIFE

The discovery of the connexion between business cycles and the transfer of the working population has created, for economic science, a new outlook. It is being gradually understood that the facts of technical progress have more than a secondary influence on certain economic facts, since they are not merely conditions of economic progress; technical progress is the dominant factor, the variable driving force of contemporary economic evolution.

At first sight, this statement may appear somewhat rash. In order to discover how apposite it is from a scientific and practical point of view, we must have a method of measuring technical progress, and then, by effecting such measurements, observe the considerable differences to be found in technical progress in the various professions.

### *The Productivity of Work*

The traditional technological idea of the productivity of work has been so brought up to date and clarified that it can be used as a means of measuring long-term technical progress.[1]

Thus, for some years, such measurements as well as comparisons between nations and different periods of time have been effected increasingly in a large number of countries. In particular, numerous European experts, thanks to American technical assistance, have been able to familiarize themselves with the methods of measuring productivity used by the Bureau of Labor Statistics in Washington; and many others have been able to study the causes and methods of the high American level of productivity.[2]

[1] *Terminology of Productivity*, publication (in English and in French) of the Organization for European Economic Co-operation, Paris, 1950 (document prepared by the Productivity Committee of OEEC).

[2] The bibliography concerning the measurement of productivity, although almost non-existent five years ago, is now accumulating rapidly. The pioneers are D. Evans and J. Silbermann of the Bureau of Labor Statistics (Washington), and L. Rostas of the National Institute of Economic and Social Research (London).

See in particular: L. Rostas, *International Comparisons of Productivity*, International Labour Review, Geneva, September 1948; L. Rostas, *Comparative Productivity in British and American Industry*, Cambridge Univ. Press, 1949; ILO, *Methods of Labour Productivity Statistics*, Geneva, 1950 (this latter document does not give an altogether precise account of the scientific movement we are now discussing; it presents the problem of productivity in its technological aspect and almost completely neglects or ignores its economic aspect).

See also the publications of the various National Productivity Centres and, more particularly, the reports of missions of enquiry in the United States, and the specialized reviews: *Produttività* (Milan), in Italy; *Productivité française* (Paris), in France. A list of these publications and the addresses of the National Productivity Centres may bee obtained from OEEC, rue André Pascal, Paris.

This research and these measurements have revealed or confirmed one vital fact, namely that technical progress varies considerably from one profession and one country to another. The extent of these differences makes them the dominant factor in contemporary economic evolution and makes it possible to understand, in terms of cause and effect, a large number of economic phenomena which previously seemed to be independent, fortuitous and unforeseeable. It is therefore on economic life as a whole that the theory of technical progress casts its light.

We cannot, in this short article, hope to give even a simple idea of the results which we obtained from our initial rapid survey of this subject.[1] Without reverting to the problems (mentioned above) of crises, the distribution of the working population, and income, we should have to examine, in turn, all contemporary economic problems—public finance and taxation, credit, distribution of income, profits, international trade, etc. In short, all the problems of economic theory, economic history and economic geography should be re-examined and restated in terms of technical progress.

Here we shall give only one example, by briefly discussing the fundamental problem of economic science—that of the standard of living of the various peoples and the purchasing power of the wage-earners.

## THE STANDARD OF LIVING OF THE VARIOUS PEOPLES AND THE PURCHASING POWER OF THE WAGE-EARNERS

We have already seen that since 1906, when the idea of industrial revolution became established, economic science has taught that a nation's power and its inhabitants' standard of living depend on its industrial capacity. But the economists of that period still entertained the very simple notion that the purchasing power of a wage-earner depended on his salary and that if his salary were doubled his purchasing power also doubled. This seemed evident for, if one of your colleagues earned twice as much as you, his purchasing power and standard of living were twice as high as your own.

A fairly difficult intellectual process was required in order to reveal the error of this simplified reasoning. Analytical studies of the working population, profession by profession, were necessary in order to prepare the mind for analytical studies of prices, production by production. The problem of purchasing power thus passed from the financial plane, where it was insoluble, to the technical plane, where fruitful discoveries were possible.

Once this method of research was adopted, it was not difficult to perceive that the rise which had taken place in the standard of living during the last 100 years in the United States, for instance, was by no means uniform for every kind of consumption; for certain kinds there had been a very great increase in purchasing power, and for others practically none at all.

The general idea of purchasing power was then broadened to include an analytical idea according to which each kind of consumption must be studied in turn, with particular reference to the technical conditions of each consumer article's production.

I cannot here describe all the results of this analysis; they may be summed up by saying simply that the real price of tertiary goods and services is the

[1] Cf. J. Fourastié, *Le grand espoir du XX^e siècle* (*Progrès économique, progrès social*), Presses Universitaires de France, Paris, 1950. *Machinisme et bien-être* (*niveaux de vie, genres de vie*), Éditions de minuit, Paris, 1951.

same in all countries.[1] I shall briefly state the substance of the theory of the standard of living, such as I am able to formulate it today, in three propositions or theorems:

1. Where there is no technical progress, there is no advance in purchasing power.

Where technical progress has had little or no influence or has been inadequate to overcome the complications of production, due for instance to the ever more complex activities of the state, to the legal system or to inter-professional relations, in all these cases, in which technical progress has been powerless to reduce the time required for production, the purchasing power of the wage-earners and the standard of living of the various peoples have failed to register any advance. The now classical example is that of the men's hairdresser. From Roman antiquity up to the present time, there has been a fixed relationship between the price of a haircut and the hourly wage of a haircutter; in general, the price of a haircut is equivalent to an hour's wage. In this respect there has been no evolution in time. The absence of evolution in time also implies the absence of disparities in space. Seeing that, for centuries, a haircut has required approximately the same amount of working time,[2] the real price, i.e. the price expressed in hours of wages, is the same in all countries, both capitalist and collectivist.

Haircutting is only one example; there are many others, such as tapestry worked by hand on cartoons prepared by painters. The price of a square metre of tapestry is still equivalent to 1,000 hours of the worker's salary; this relationship has never varied: 1,000 hours of salary in the time of Louis XIV, 1,000 hours of salary at the present time, 1,000 hours of salary in all countries.

The price of a tapestry therefore directly depends on the hourly salary. It is sufficient to know the kind of stitch, the thickness of the wool and the hourly salary of a tapestry-worker in any given country in order to calculate the price of the tapestry; there will of course be a margin of error of approximately 10 per cent, not one per cent or one per thousand.

It would be possible to give numerous other examples of such a fixed relationship between prices and salaries. Medical visits, entertainment shows, private lessons, schooling, services rendered by the liberal professions, personal services and domestic services—all these are generally included in the category of tertiary production. Likewise, repairs are generally much more tertiary than the production of new objects; thus the real price for repairing an inner tyre tube is the same in New York as in Paris, whereas the price of a new tube is equivalent to one and one-half hours of the worker's wage in New York and to four hours in Paris. This disproportion between the price of the new article and the cost of its repair explains what is known in the United States as waste. In Paris a woman

[1] The author uses the term tertiary to describe those kinds of production in the case of which progress in productivity has been slight, very slight or non-existent. Those where there has been considerable progress in productivity are primary or secondary, according as they are agricultural or industrial. One type of production can be tertiary in one country and secondary in another, or secondary for a certain period of time and tertiary for another period.

As will be seen later, haircutting is a good example of a tertiary service. A haircut for a man is equivalent to one hour of a haircutter's wage in Paris; 0.9 in London; 0.9 in Brussels; 0.9 in Ottawa; 1.2 in Madrid; 1 in Washington and New York; 1.3 in Budapest; 1 in Rome; 0.9 in Stockholm; 1 in Berne.

On the other hand, the real price of 1 kilo. of sugar, in the production of which there has been considerable technical progress, varies from 3.6 hours of wage in Hungary and 2.85 in Spain to 0.4 in England, 0.3 in Canada and 0.2 in the United States. Thus, expressed in terms of haircuts, the national income per inhabitant is practically the same at all periods and in all countries.

[2] The tools used in production influence the price of the product only if they are a determining factor in the length of time required for production.

has her stockings mended because this mending costs two-thirds of an hour's wage, whereas a new pair of stockings costs from five to seven hours of wages; in New York she does not do so (although the real cost of mending stockings is the same as in Paris) because a new pair of stockings of the same quality costs barely one hour's wage.

The cataloguing of the various types of production and their classification according to their increasing or decreasing technical progress is easy and fruitful and is a process that enables scientific estimates to be made. It can shed considerable light on that fundamental yet disappointing sector of economic science which is known as the formation of prices. Such cataloguing however has hardly begun. At the time of writing this article I can say, for instance, that of the primary products potatoes are more tertiary than wheat, and tobacco more tertiary than potatoes; but, apart from rare observations such as these, this immense field of research still remains to be explored.

2. Where there is considerable technical progress, there is a considerable increase in the purchasing power.

If productive processes have resulted in increased production, i.e. if there has been considerable technical progress, whatever be the legal conditions, the profits, the income, or the political régime, there is also an improvement in the purchasing power of the consumers. This is the main reason for the social progress accomplished during the last 150 years. All other factors in increased purchasing power, due to nationalization, taxation, changes in legal status, etc., are of altogether secondary importance and are often quite negligible in comparison with the increases due to technical progress.

The example of mirrors is particularly interesting, because large mirrors and small mirrors are produced by the same factories. Small mirrors were manufactured 200 years ago within approximately the same time-limits as those obtaining today; on the other hand, the time required for the production of large mirrors now differs considerably from what it was towards 1750. If my statements are correct, purchasing power must have increased much less with respect to small mirrors than with respect to large mirrors, either because it was not known how to produce large mirrors or because their production required tremendous efforts involving thousands of hours of work. The typical example which I give most frequently is that of a mirror measuring 2 × 2 metres and costing 2,750 livres in 1720, when an hour's wage was equivalent to 1½ sous; consequently, 40,000 hours of wages were necessary in order to pay for this mirror; but at the present time, in Paris, only about 300 hours of wages are necessary, as such a mirror costs approximately 30,000 francs.

Thus, the real price has fallen from 40,000 hours to 300 hours of wages, which means an increase in purchasing power in the ratio of 1 to 130. In the case of small mirrors, on the other hand, the increase in purchasing power is only in the ratio of 1 to 10 or 1 to 20; even this is considerable, particularly in comparison with tapestries and haircuts, but it is 10 times less than for mirrors measuring four square metres.

Tapestries and four-square-metre mirrors are produced by two concerns having a similar legal status; both were established by the State, in fact by Colbert: the Manufacture des Gobelins and the Manufacture de Saint-Gobain. The explanation of the considerable differences (from 1 to 130) found in the evolution of purchasing power for the products of these two concerns is not to be sought in any different evolution of profits

or in the activities of the trade unions; for it is difficult to see why the latter should be effective in the case of four-square-metre mirrors and ineffective in the case of tapestries, and even more difficult to see why they should be effective in the case of four-square-metre mirrors but ineffective in the case of mirrors measuring four square centimetres. I do not wish to infer that the activity of trade unions is entirely without influence in this matter; but these examples show us that they can merely exploit the various possibilities. The trade unions can and must act in order to expedite the translation of possibility into fact, but advances can only come through technical progress. Trade union activity can hasten developments; it can ensure a more rapid fall in prices when technique makes such a fall possible; but what is possible is determined by technology.

3. When technical progress is the same, purchasing power is the same.

Lastly, the third theorem of the theory of purchasing power is the counterpart of the other two; it shows that if different types of production are effected by identical or similar techniques, they involve purchasing powers which develop in a parallel direction; when productivity is the same, the purchasing power is the same. Cereals are one of those rare types of consumer produce which, although they have widely differing markets, are produced by almost identical methods. In France, the demand for wheat reached its highest point towards 1890; the demand for oats, which is related to horse-drawn traffic, reached its highest point towards 1910; rye and barley also have markets which are very different from each other and from those of the other two products.

In spite of these very varied demands, the evolution of the price of these four cereals, and consequently the evolution of purchasing power with regard to them, have been exactly the same. On the other hand, we have only to compare wheat with potatoes in order to find considerable differences; in France, potatoes, if compared with wheat, are five times dearer than they were in the past. These simple observations and these modest figures seem to me to call for a revision of all developments in the classical theory of prices. Markets and legal conditions are less important, and the technique of production is more important, than has been admitted; the latter, in the long run, is not only preponderant but decisive. Why have cereals proceeded at the same pace (if I may so express myself), and potatoes at a quite different pace? Most probably because technical progress has been the same for all cereals, and has been much more intense in the case of cereals than in that of potatoes. But it would be necessary to verify these hypotheses, product by product, and nation by nation.

Once it is realized that technical progress has an influence on each single phenomenon of economic life and more particularly on that which is of the greatest interest to all of us—namely our standard of living—the idea of technical progress becomes the centre of economic science.

On the plane of action, and more particularly of social action, a second fact seems obvious, namely that technical progress governs economic evolution and consequently the main transformations of the modern world; in particular, technical progress governs social progress.

Such is the vast and fruitful new field which still remains to be explored; "the harvest is plenteous but the labourers are few", for many follow beaten tracks and paths that lead nowhere. The importance of the new paths is that they are connected at one and the same time with economic science, techno-

logy, and sociology proper. Breaking down the artificial barriers which obstructed the development of each particular discipline, the study of the economic and social consequences of technical progress restores to human phenomena the objective and comprehensive nature which they had lost owing to the influence of abstract theorists; economists who seek simplicity through abstract theories merely discover what is arbitrary and unreal; they indulge in intellectual exercises which make them impervious to the lessons of experience and incapable of action.

In other words, the financial idea of economics which by force of tradition has prevailed up to the present day in most Western nations (in the Keynesian form, for instance) is revealing itself as incomplete and increasingly ineffective, because it leads us to think in terms of wealth and capital, profits, income and credit, whereas we have to think in terms of work. Economic phenomena are essentially human phenomena, from the point of view not only of consumption but also of production, for the phenomena of production are essentially phenomena of working population; it is therefore the distribution of the working population which is the fundamental factor in any economic policy.

It is therefore reasonable to hope that this new branch of economic science will develop rapidly and that, in the near future, it will enable economic policy to be placed on a fresh footing in every nation, with a view to reducing poverty and states of tension, making social progress universal, and fulfilling the tremendous task confronting the world—the building of a new civilization.

TABLE I. Prices, wages and purchasing power of wages in France from 1702 to 1951.

| | *1702* | *1891* | *1951* |
|---|---|---|---|
| Average hourly wage of a labourer in the provinces. . . . . | 1½ sous | 5 sous | 100 fr. |
| Current prices of goods and services | | | |
| (a) when there is no increase in productivity (tertiary) | | | |
| one square metre of tapestry. . | 70 livres | 300 fr. | 120,000 fr. |
| one haircut in Paris. . . | 1½ sous | 5 sous | 120 fr. |
| (b) when there is great technical progress (secondary): | | | |
| a mirror (4 sq. m.). . . . . | 2,750 livres | 200 fr. | 30,000 fr. |
| a bicycle with pneumatic tyres. . | — | 380 fr. | 19,000 fr. |
| Number of hours of wages necessary to pay for: | | | |
| (a) goods and services, when there is no increase in productivity: | | | |
| one square metre of tapestry. . | 1,000 | 1,200 | 1,200 |
| a haircut . . . . . | 1 | 1 | 1.2 |
| (b) when there is a great increase in productivity: | | | |
| a mirror (4 sq. m.). . . . . | 40,000 | 800 | 300 |
| a bicycle . . . . . | — | 1,520 | 190 |

TABLE II. Real prices (expressed in hours of work) of certain goods and services.

The reference wage is the total average wage of an unskilled industrial worker, i.e. the direct salary plus all the additions and social charges falling upon the employer; date of survey, December 1950.

The figures contained in this table have obviously only an approximative value. But however rough these estimates may be, they amply suffice to show that purchasing powers throughout the world vary only slightly with regard to tertiary services (cinema prices and prices of haircuts—the same would be even truer as regards the hourly wage of a charwoman). On the other hand, they differ considerably in the case of products benefiting from great technical progress (wheat and electricity are 15 times dearer in Madrid than in Ottawa, whereas a haircut is only 1.25 times dearer).

| *Country* | *Reference Wage* | *Quintal of Wheat* | *Kwh of electricity* | *Kilo. of sugar* | *Radio set* | *Cinema (price of a seat in a local cinema)* | *Haircut* |
|---|---|---|---|---|---|---|---|
| Canada (Ottawa) | 1 $ | 6 | 0.02 | 0.3 | 35 | 0.6 | 0.8 |
| United States (Washington) | 1.15 $ | 8 | 0.04 | 0.2 | 20 | 0.6 | 1 |
| Sweden (Stockholm) | 2.8 c | 11 | 0.04 | 0.35 | 70 | 0.9 | 0.9 |
| Belgium (Brussels) | 20 fr. | 21 | 0.15 | 0.7 | 100 | 0.6 | 0.9 |
| England (London) | 2.5 sh. | 22 | 0.2 | 0.4 | 110 | 0.75 | 0.8 |
| Switzerland (Berne) | 2.7 fr. | 24 | 0.15 | 0.4 | 70 | 0.65 | 1 |
| France (Paris) | 110 fr. | 24 | 0.2 | 1 | 90 | 0.8 | 1.1 |
| Italy (Rome) | 200 L. | 36 | 0.12 | 1.3 | 125 | 0.65 | 1 |
| Spain (Madrid) | 3.15 pt. | 90 | 0.3 | 2.2 | 260 | 1.2 | 1 |

TABLE III. Comparative evolution of the prices of cereals and potatoes during the last two centuries.

Percentage relation (%) of the current price of a quintal of cereals and of potatoes to that of a quintal of wheat, from 1726 to 1951 (wholesale price at the farm).

| | *Rye* | *Barley* | *Oats* | *Potatoes* |
|---|---|---|---|---|
| France | | | | |
| 1726-1731 | 71 | 68 | 68 | — |
| 1750-1755 | 68 | 65 | 68 | — |
| 1786-1789 | 75 | 71 | 66 | — |
| 1726-1789 | 71 | 67 | 68 | |
| 1835-1840 | 67 | 56 | 70 | 11 |
| 1875-1880 | 65 | 70 | 74 | 25 |
| 1911-1913 | 74 | 75 | 78 | 30 |
| 1835-1913 | 69 | 68 | 71 | — |
| 1920-1925 | 76 | 76 | 75 | — |
| 1936-1939 | — | — | — | 40 |
| 1945-1950 | 83 | 74 | 69 | — |
| 1914-1950 | 73 | 73 | 67 | — |
| 1950 | 83 | 74 | 69 | 48 |
| United States | | | | |
| 1909-1913 | 77 | 84 | 77 | 65 |
| 1936-1940 | 70 | 74 | 68 | 100 |

The figures relating to oats all range from 67 to 78; those relating to rye from 65 to 83; and those relating to barley from 56 to 84; whereas the figures relating to potatoes range from 11 to 100.

Source: J. Fourastié, *Prix de vente et prix de revient; Recherches sur l'évolution des prix en période de progrès technique (2e et 3e séries)*. Brochure autographiée, Domat-Monchrestien, Paris, 1950 and 1952.

# THE SOCIAL CONSEQUENCES OF TECHNICAL CHANGE FROM THE PSYCHOLOGICAL STANDPOINT

Einar Thorsrud

## INTRODUCTORY REMARKS, STATING THE PROBLEM

The present topic is not of primarily academic interest to social scientists; it is rather a question of vital interest to us as members of a modern society.

There is no need here to elaborate the history of technology, explaining how we have got more and better food and shelter and greater protection against illness and distress. But a number of popular beliefs indicate that there is a need for clarification of the negative effects of technological changes on human relations. What causes people to say: "Modern technology develops weapons for the suicide of society", "technology has deprived the worker of job satifaction and created bad relations between employer and employee", "we all become nervous and unhappy because of the speed and noise of modern technology".

A well-known sociologist a few years ago in addressing a congress of engineers made the following statement:[1] "So widespread and deep-rooted is the belief that technological advance is a self-evident good that men have largely failed to look into the *conditions of society* under which this is indeed the case. If technology is good, it is so because of its human implications, because large numbers of diversely placed men have occasion to regard it as such in the light of their experience. And whether this occurs depends not so much upon the intrinsic character of an advancing technology, which makes for increased capacity to produce an abundance of goods, as upon the structure of society which determines which groups and individuals gain from this increased bounty and which suffer the social dislocations and human costs entailed by the new technology. Many, in our society, find the pluralistic social effects of the progressive introduction of labour-saving technology to be far from advantageous. . . .

Some 200 years ago Rousseau warned his contemporaries against the unhappiness which would follow cultural development. A century later a French engineer, Le Play, published a number of volumes containing detailed descriptions of European communities where technological changes were

[1] Robert K. Merton, "The Machine, the Worker and the Engineer", *Science*, Vol. 105, p. 79.

taking place. Le Play doubted that these changes made men happier. He pointed to the disorganization of families and work-groups, to the decrease in the feeling of "belongingness" and to the lack of order and stability in inter-personal relationships. Durkheim, one of the founders of modern sociology, formulated a theory of suicide which was based on a study of industrial society. In our own days, Mayo[1] and Fromm[2] have from different approaches reached the conclusion that technical advance without sufficient consideration of its social effects has left us a world where conflict between groups are more common than co-operation, a world where individuals suffer from insecurity and a feeling of insignificance.

There seems to be no reason to object to the opinion that technological changes have had a number of negative social consequences. It would, however, be most unrealistic to conclude that technology is no good, that we must discard it and go back to the "good" old days. The clock can't be switched back. Technology has advanced because people wanted it, and they will never let it go again.

The principal question psychologists should ask themselves in facing the problems we are here considering is: What predictions can we offer regarding the effects of technological changes on inter-personal relationships? If we introduce new technical methods and means into the life of a family, or a country, if we change the technical set-up of a factory, what will the consequences be for the relations between the family members, between the citizens or the workers?

If it is true that psychologists in co-operation with other social scientists can give valuable predictions of the kind just mentioned, a more practical question will be raised: What specific methods and techniques can we offer if people want our help to achieve certain positive effects and avoid other effects of technological influence upon inter-personal relationships? If a school or a town wants to establish social relations characterized by certain norms, for instance optimal development of personal abilities and minimal aggression between the pupils or the citizens, what technological changes could be made within this school or town and how could they be made?

Before we approach such questions let us consider the main psychological aspects of the social consequences of technological change.

## PSYCHOLOGICAL ASPECTS OF THE SOCIAL CONSEQUENCES OF TECHNOLOGICAL CHANGE

Psychology is a science of behaviour and treats of the inter-relations between human beings and their environment. As such it must seek the determinants which underly behaviour. There is however no simple relationship between the stimuli of the outside world and observable behaviour. There is something within the individual, some covert behaviour, there are certain intervening variables[3] which we must study if we want to predict the social consequences of something happening around the individual, for instance of technological changes. Human motives and attitudes are important intervening variables. This article will, in fact, deal mainly with these psychological phenomena. From a psychological point of view it is through their influence on human motives and needs that technological changes have caused so many and auch

[1] E. Mayo, *The Social Problems of an Industrial Civilization*, Harvard, 1945.
[2] E. Fromm, *Escape from Freedom*, Rinehart, 1941.
[3] T. M. Newcomb, *Social Psychology*, Drydon, 1950.

great social changes, changes in inter-personal relationships. Technical advance has led to greater satisfaction of fundamental needs of millions of people. As a consequence, people get satisfaction also in new ways; they change their preferences, i.e. their consumption habits. These new habits are often contradictory to previous attitudes and therefore may cause emotional trouble. People want the new goods offered them, but to use them or benefit from them may imply that old attitudes, old opinions of right and wrong must be given up. New habits demand new social skill which may take time and consideration to acquire. New sentiments, new aims for human hope and striving have appeared; at the same time new sources of frustration have developed. New factors have come to decide how social groups are built up and how they function, communication, co-operation and leadership have changed.

This generalization might be stated in more concrete terms and further consequences might be indicated by means of examples. We might seek such examples within the social sciences, although we will find that there are comparatively few data directly relevant to the broad problem we have just outlined. More and more, however, investigations are being carried out which clarify at least some important aspects of the problem.

## THE EFFECTS OF TECHNOLOGY ON MOTIVATION AND INTER-PERSONAL RELATIONS AMONG PRIMITIVE PEOPLE

Some small communities in the State of Virginia, have remained until recently almost without the influence of modern technology. Sherman and Henry[1] report some interesting findings from these communities. The "Hollow folks" have reached different levels of technical development and some important differences in the desires of these people to be related to their technological conditions. In Calvin Hollow, which is the most isolated of the communities people seemed to have very simple needs; they did not want such things as a better house or travel. They were indifferent to the question of what they wanted to be, and they were not willing to do much extra work to make their physical environment more comfortable. They were satisfied to remain as they were. In Rigby Hollow, much more technically advanced, the wants of people were more varied and they were striving to satisfy needs that were not at all fundamental to their physical well-being. The change in motivation could be clearly observed among children. The authors conclude: "At each step upwards the wants of the children showed the influence of the general culture level . . .", ". . . As the culture level rises, wants increase. There is a greater striving to satisfy additional desires. . . ."

The Hollow "folks" also showed interesting differences in *tempo* of life and in the degree of social differentiation as they came gradually more in contact with technology. Different social classes appeared and specialization of work began; family relationships, too, were greatly influenced.

Studies in Japan and South Africa have produced results similar to those from the Hollow communities. Motivation changes as technological development advances. People want new things, their level of aspiration becomes higher, and the structure of the family, the work-group and of the entire community is changed. Our present knowledge of the nature of the motivational changes that follow technological advance is, however, rather

[1] M. Sherman and T. R. Henry: *Hollow-Folk*, Crowell, 1933.

[2] The author is indebted to Dr. Daniel D. Katz for an inspiring conversation with him during the preparation of this article.

limited and further research is needed. It would be of great interest, for example, if the plans for technical aid to "underdeveloped countries" could be followed by social research on the consequences of the introduction of technology in primitive societies.

## THE MOTIVATION AND ATTITUDE OF INDUSTRIAL WORKERS

We have made the assumption that it is through the influence on people's motivation and attitudes that technological changes have such great social consequences. But what is then the motivation of people living in technological surroundings, what do industrial workers want and what determines the degree of satisfaction they get from their work?

A study by Hoppock and Spiegler on "Job Satisfaction" (1935) indicated that the following factors were decisive in determining liking for the job: work associates; the work itself; the boss; variety; freedom in work; hours; earnings.

The factors are mentioned in order of frequence. Most people will find it surprising that earnings come last. However, this or similar surveys certainly give us no right to conclude that pay is not important. Nevertheless a number of studies show that social factors, e.g. good work associates or good supervisors, are of the greatest importance in determining job satisfaction; and several show that employers believe pay to be more important to workers than is the case.

Studies of job satisfaction do not of course, tell us everything about worker's motivation. Factors in life outside the factory must be of the greatest importance as determinants of motivation and attitudes. Some studies of the morale of workers made by Katz[1] show that "in-plant" conditions—wages, kind of work done, relations between workers and supervisors and sense of participation —seemed to be more important in determining worker morale than living conditions outside the plant.

When considering job satisfaction of people in an industrial setting, it is important to note that personal adjustment and satisfaction of human needs seem to vary considerably with the level of socio-economic status. On the basis of a study on worker morale, Kornhauser[2] concludes: "A sketchy analysis of peoples, major motivations and the opportunities for their gratification at the several income levels suggests that personal maladjustment, frustration and unrest are likely to be greater, on the whole, as one descends the socio-economic scale."

## PHYSICAL VERSUS SOCIAL DETERMINANTS OF PRODUCTIVITY

One of the most significant studies of human relations in industry that has ever been undertaken was started at the Hawthorne plants of the Western Electric Company in 1927.[3] From the beginning the research work aimed at the clarification of physical factors causing fatigue. Experiments on the effect of illumination on productivity gave, however, the most confusing results. The best experimental conditions had been arranged; with an experimental

[1] D. Katz, "Survey techniques and polling procedures as methods in social science". *Journal of Social Issues*, 3, No. 4.

[2] A. Kornhauser (in Hartman and Newcomb: *Industrial Conflict*, Cordon, 1939): "Analysis of 'class' structure of contemporary American Society."

[3] T. North Whitehead, *The Industrial Worker*. Harvard University Press, 1938.

group of workers in one room and a control group in another changes in illumination were introduced. The results made no sense; for instance when the illumination was increased production went up, but it also went up in the control room where no change in lighting had been made. Illumination was decreased in the experimental room and again production went up both here and in the control room where no change had been made. Fortunately the experiments were not dropped because of these embarassing results. Those in charge decided to continue the study in a test room which is now famous. They selected a group of workers, trained them and won their co-operation. Then they started a long series of experiments whereby a number of changes in the working conditions were introduced at the same time as productivity was measured, and the attitudes and opinions of the workers were recorded. Not only changes in the physical environment were made; the workers were consulted on every step made in the experiment. An informal leadership developed within the group, and the members were encouraged to express their opinions and feelings to the management. The results of this part of the Hawthorne studies were in many respects similar to those of the illumination experiments.

Parallel with the introduction of several improvements, such as rest periods, shorter working hours, food or coffee during the morning break, production went up. When, however after long series of experiments, the original working conditions were re-established, this did not cause a decrease of production to the original level. On the contrary even this change seemed to contribute to the general increase in production.

What then had really happened? In his book, one of great importance in creating among the general public a greater interest in human relation problems, Mayo gives us his own opinion and that of his closest colleague during the Hawthorne experiments: "I have often heard my coleague Rœthlisberger declare that the major experimental change was introduced when those in charge sought to hold the situation humanly steady (in the interest of critical changes to be introduced) by getting the co-operation of the workers. What actually happened was that six individuals became a team and the team gave itself whole-heartedly and spontaneously to co-operation in the experiment. The consequence was that they felt themselves to be participating freely and without afterthought and were happy in the knowledge that they were working without coercion from above or limitation from below."

The Hawthorne experiments included interesting studies other than the two we have mentioned here. They all seemed to corroborate the finding that social determinants of productivity are very important. The studies did not prove that physical determinants were insignificant but they did prove that they were important only as parts of the whole environment of the workers. And, in workers' environment, the social components, the social atmosphere seem to be decisive in securing good adjustment of the worker and in creating an attitude which promotes high productivity.

We will not here consider the question whether high productivity is in itself a satisfactory criterion for use by social scientists in measuring improvements in human relations. This important question, often neglected in discussions of the results of the Hawthorne experiments and similar studies, will be considered later.

As part of a great research programme in human relations carried out by the Survey Research Center of the University of Michigan[1] an extensive study was undertaken in the Prudential Insurance Company. The plan was to "investigate systematically the conditions making for variations in productivity and in the satisfaction which individuals derive from membership in groups organized to achieve given objectives".[2] The study is remarkable in several respects. Its most important characteristics are "the degree of control of non-psychological factors which might affect morale and productivity and the systematic measuring of the attitudes and perception of workers and supervisors, and the relation of these to performance".[2] Productivity was exactly recorded and intensive interviewing was undertaken to investigate attitudes and morale. The report sums up thus the major findings (p. 62): "Most of the differences found between high and low work groups appear to be related to the differing nature of the supervision of these groups." The supervisors of high-producing sections seemed to delegate more responsibility to their workers and to consider employee relations more than production. The attitude factor that seemed to distinguish most clearly high-and low-producing workers was pride in work group. In one department the interesting fact was revealed that workers more critical of company policies were better producers than those less critical.

The results reported are in the main confirmed by another interesting study along the same lines.[3] This latter was carried out in quite different surroundings —among railroad workers—while the first one took place among office workers.

On the basis of the studies so far reported the following tentative conclusions seem justified. Although we know comparatively little about what specific motivational changes occur when technological changes take place in a society, several studies show that some motivational changes do take place. If we study the motivation of people in an industrial society we find that motivational factors determined by the nearest social environment, by leadership and other inter-personal relationships within work groups, seem to be of the greatest importance to personal adjustment and behaviour.

The scope of this article has thus been restricted to a certain extent and studies will therefore be considered which are more specific both with regard to their purpose and the methods and techniques applied. It is hoped, however, that thus far some indications have been given as to what kind of predictions the social scientist is able to offer in connexion with the social consequences of technological change. Further indications might follow from a brief survey of two other studies, which might also reveal some of the techniques social scientists can offer to help achieve certain goals.

## TECHNOLOGICAL AND PSYCHOLOGICAL DIFFERENCES OF TWO COAL-MINING SYSTEMS

The so called "longwall" method is the common system of coalmining in Great Britain today. The method is similar to methods of mass production

[1] *A Program of Research on the Fundamental Problems of Organizing Human Behaviour*, University of Michigan, 1947.

[2] D. Katz, N. Maccoby and N. C. Morse, *Productivity, Supervision and Morale in an Office Situation*, Part 1, University of Michigan, 1950.

[3] D. Katz, N. Maccoby, G. Gurin and L. G. Floor, *Productivity, Supervision and Morale among Railroad Workers*, University of Michigan, 1951.

in factories, where production is divided into its elements and the tasks of the workers are simple and repetitive.

The coal is extracted in a 24-hour cycle by three isolated groups of workers. A. T. M. Wilson[1] describes the social consequences of this system. "In social structure the system is incoherent, while its technical rigidity makes it unable to use the initiative and flexibility traditional in the industry. Isolation exists at the coal-face, and community life is split by the shift time-tables, though the danger and stress of mining means that group security at work and at home is a paramount need. Supervision is remote and inspectorial, and a war with authority proceeds in a situation demanding executive leadership." A systematic analysis of the "longwall" method and its social consequences has been made by Trist and Bamforth of the Tavistock Institute of Human Relations.[2]

Increased production in the coal-mines is not easy to achieve in a period characterized by shortage of labour. Social scientists have contributed to a solution of this question by helping to introduce a new method of coal-mining called the "continuous method".

A. T. M. Wilson outlines the new system and its consequences: ". . . a coal-face one third as long is advanced three times as far in the 24 hours. The total task of coal-getting is completed in a one-shift cycle, so that each shift is an autonomous unit of 25 men. . . . There is a single category of multi-skilled workmen and a single method of payment by day-wage, which have eliminated status differences". (In longwall method the miners work on piece-rates.) "Group security at the coal-face has diminished stress, and miners who could no longer operate the old system are back at work at the age of 55. Men share the shifts, and there are signs of a better atmosphere in family and community life. Production so far is up 30 per cent with man-power saved and costs cut."

We still know too little about the experiment just reported to evaluate the encouraging results, but we can at least appreciate the penetrating analysis of the longwall method. The analysis by Trist and Bamforth indicates that at least four types of defence mechanisms may become active when a rigid technological system causes social maladjustment:

1. Informal organization. Cliques within the formal work groups develop and barriers between these cliques hamper co-operation.
2. Reactive individualism. People being isolated from the rest of the work group react negatively towards the others. Anti-social actions and intrigues appear.
3. Scapegoating. Insufficient communication causes bad team spirit and the workers get into the vicious circle of "passing the buck". Problems are left unsolved and everyone suffers.
4. Self-compensatory absenteeism. To defend themselves against the consequences of the anti-social behaviour of others and the insecurity caused by deficient organization of work, the miners tend to stay away from work.

This study of mining methods reveals many of the more harmful social consequences of technological change. We shall mention one more study before summing up our conclusions.

[1] A. T. M. Wilson, "Some Aspects of Social Process", *Journal of Social Issues*, No. 5, 1951.

[2] E. L. Trist and K. W. Bamforth, "Some Social and Psychological Consequences of the Longwall Method of Coal-Getting", *Human Relations*, Vol. IV, No. 1, 1951.

A factory that wants to survive must adjust itself to market demands, to technical inventions and other varying conditions of society. Coch and French[1] report how resistance to change among workers can be studied and overcome.

The management of a garment factory was faced with the problem of increased labour turn-over when technological changes were made, and workers obliged to change their working methods did not maintain their earlier proficiency. These difficulties could not be explained by loss of earnings. Acquiring skill in new jobs seemed to represent no great problem. Systematic interviewing revealed, however, that motivational factors determined by the work group seemed to be decisive in creating resistance to change. "In addition to resentment against the management for transferring them, the employees typically show feelings of frustration, loss of hope of ever regaining their former level of production and status in the factory, feelings of failure, and a very low level of aspiration." A small "laboratory experiment" confirmed the hypothesis that group norms and inter-personal relationships were major factors of the problems mentioned. Consequently an experiment was planned in which group decision was the main variable. A control group underwent the ordinary procedure of change. The new working methods were developed by the production department, a new piece rate was set and a meeting was held in which the changes were explained, the causes that had necessitated them were given and questions from the workers were answered. Immediately after the change was made, trouble turned up in the work group. Almost no increase in production occurred after the natural drop following the change, and marked expression of aggression against the management was observed. During the first 40 days 17 per cent of the workers left. This was the usual series of events in the factory when changes were made.

In the first experimental group, another procedure was followed. A meeting was held and the need for change was demonstrated clearly. Suggestions were asked for and after discussion, the group agreed with the management on a plan for change and a new piece rate. Special operators were selected for training, group discussions were held and the special operators in turn trained the rest of the workers in the group. In this group production was rapidly increasing after the change, and the workers exceeded their former level. No workers left during the next 40 days, and there was no aggression against the management.

In the two other experimental groups all the workers were treated in the same way as the special operators of the first experimental group. In these two groups production increased even more rapidly. No workers left and co-operation with the supervisors was good.

The control group of this study presents a picture well-known to people in industry. The results obtained in the experimental groups are unfortunately not so common. When resistance to change in industry is so widespread there are certainly good reasons for it. The study just reported points to the importance of group determined motivational factors. When we consider how workers usually have learned to view technological change, this is not unnatural. Even when workers do not fear unemployment as a result of technical change, we must realize that their prestige and their social status have often been diminished by such changes. The worker's status is a function of his role in the work group. The work groups provide workers with a social environment

[1] L. Coch and J. R. P. French Jr., "Overcoming Resistance to Change". *Human Relations*, 1, No. 4, 1948.

where they find social security. When changes in group relations are enforced from outside it is not surprising that the group members resist as long as they remain uncertain of the consequences. In the study reported we find that resistance is stronger when changes are introduced in an authoritarian manner. A number of studies confirm the fact that resistance to change and aggression caused by such change are diminished in proportion as the workers in their natural groups are allowed to participate in the process of change. When a group is informed of a change and oriented towards a goal which the members can accept, the group will reinforce the individual motivation to reach that goal. When the group is not oriented towards a goal, individual motivation may also be reinforced, but in this case it may have the effect of creating stronger opposition to the authority trying to enforce a change.

Newcomb concludes from this and similar studies: "It would probably not be an exaggeration to say that the principal source of human waste—in our society, at least—lies in our failure to take advantage of group resources for increased individual motivation."

## CONCLUDING REMARKS

The author assumes, from a psychological point of view that it is through their influence on human motivation that technological changes have such great social consequences. Technical advance has given people greater satisfaction of fundamental needs; thence, a striving to satisfy secondary needs, and the intensification of additional desires. We can yet point to relatively few studies which can tell us in general terms about the motivational changes following technological change. A number of studies have, however, given sufficiently encouraging results to indicate that social scientists ought to devote more time to clarify these interrelationships which are so vital to the improvement of community relations. Several studies show that social unrest, insecurity and maladjustment have been created because the fact is often overlooked that changes in people's need-pattern and in the, ways they satisfy their needs are intimately related to inter-personal relationships within the primary groups to which they belong. The old methods of need satisfaction may have been related to a number of group functions which may not be fulfilled when new methods appear. A rearrangement of roles and leadership relations may be necessary to establish social security. When such security is not developed, defence mechanisms, social isolation or social unrest appear and social conflicts may result. When, for instance, a working procedure is being changed technically, the workers' social status may be greatly affected because their skill may lose its value or because possibilities for the practice of informal leadership may be eliminated. If the workers can't be included in the change oriented towards a new working procedure and given the assurance of another satisfactory social status, the work group will resist the change. If the change is pressed through, frustration follows and aggressive behaviour is often the result.

Inter-personal relationships or group relations are influencing peoples' ways of perceiving what is going on in their environment. These perceptions manifesting themselves in attitudes, interests or morale are important determinants of human behaviour. The social sciences have developed methods or techniques of investigating such behaviour determinants and even of influencing or changing them. It seems evident that great possibilities exist for reinforcing individual motivation oriented towards socially valuable goals

by applying these methods or techniques. The authoritarian way of enforcing technological changes seems, on the other hand, to imply possibilities of conflict within society. To overlook the social consequences of technological change would be dangerous and to consider these consequences only on the basis of common sense would be to run a greater risk of bad prediction than is necessary in consideration of the insight provided by the social sciences.

Long range experiments and studies are needed to learn more about what actually happens in a society when technological changes occur. However, a number of research institutions, for example, the Survey Research Center and the Research Center for Group Dynamics at the University of Michigan and the Tavistock Institute of Human Relations in London, are carrying out studies of great importance in this connexion.

Research in this field should aim at establishing a systematic theoretical body of knowledge to facilitate the interpretation of the results and lay the foundation for new fruitful research. Kurt Lewin's contribution towards this end is a most significant one.[1]

Social scientists should be careful not to take for granted criteria of "good" or "bad" social consequences of technological change—criteria that might be weighed in favour of a particular political philosophy or value system. If research work is to improve relations between employers and employees, both must select the problems to be studied and formulate the policies to be followed in the work.

Nor must the development of better methods of communicating results of social science work be overlooked. Encouraging attempts have already been made,[2] indicating that the time may not be remote when the results of social science will be utilized to a much greater extent than is the case today for the improvement of community relations.

# LAW AND THE PROGRESS OF TECHNIQUES

RENÉ SAVATIER

## DEFINITION AND FUNCTION OF TECHNIQUES

A technique is a co-ordinated series of methods rationally and scientifically designed to secure a specified result with the maximum efficiency. The extent to which we are interested in the progress of techniques therefore depend very largely on the results to be achieved by their use. A technique is not an end in itself, but merely serves the end it has been set. Its place in the scale of values is thus not at the top; it is within the range of the useful, not the good. It is necessary, indeed, to agree on what we mean by useful for, as progress in technique simply represents the improvement of the methods of achieving a given purpose, it may at times, as recent history has shown only too clearly, serve a bad instead of a good end.

Nevertheless, it is true that once agreement has been reached on the social

[1] K. Lewin, "Frontiers in Group Dynamics", in *Field Theory in Social Science*, Harper & Brothers, 1951.
[2] R. Lippitt, *Training in Community Relations*, Harper & Brothers, 1949.

morality of the aims in view—in other words, on what constitutes the good for man—improved techniques make it possible to attain the good more easily. The progress of techniques therefore offers the best hope for man's progress, accompanied by the fewest possible sacrifices—that is to say, by the least possible suffering.

These general remarks apply to every aspect of the subject with which we have to deal. It has to be considered from many points of view, for Law and techniques are closely interconnected in many ways. A study of the relationship between Law and the progress of techniques therefore seems to us to necessitate examination of three categories of problems, one after the other.

In the first place, Law is influenced by the progress of techniques in that it is, in a certain sense, itself a technique.

Secondly, it is affected by the progress of techniques, because Law, in regulating the claims of human life for the purposes of society, makes use of the various current techniques and, in turn, gives those techniques the legal force and background they require.

Lastly, from a more general point of view, Law cannot be indifferent to the progress of techniques. The function of Law is to order society in a world which is now seen to be governed by techniques, for a race of men who are becoming increasingly technique-minded. The general technicality of our present-day world thus calls for a form of Law different from that of earlier times.

## INFLUENCE OF THE PROGRESS OF TECHNIQUES ON LAW, BY REASON OF THE FACT THAT LAW IS ITSELF, IN A CERTAIN SENSE, A TECHNIQUE

The concept of Law is complex. It is not enough to say that it is both a science and an art. In either guise, Law partakes of both ethics and technique. Its function is to decide on duties and rights, and to impose them on men and women; the art of Law is to embody the rights and duties thus determined in the technical form best calculated to serve the interests of a given ethical and social ideal for a particular group of people at a specified time and place. The conception of this ideal is so much one with Law that, without it, the technique of Law can have no meaning or value. But, on the other hand, the ideal is so intimately connected with legal technique that, without that technique, it can never be implemented or enforced. Law is thus, no doubt, a technique (being a method whereby a certain conception of justice may be achieved and enforced with the maximum efficiency); but it is also much more than a technique, being the incarnation of Justice itself and all the moral values which go with it.

If the progress of techniques is to exercise a beneficial influence on Law, therefore, it must lead to a more perfect form of Law, without compromising essentials. Techniques should improve the means at the Law's disposal; but it must never be forgotten that Law's first *raison d'être* is the service of Justice, and Justice must always take the precedence over perfection of technique.

Subject to this fundamental reservation, the progress of Law as a technique may be considered, in the main, under two heads: proof and enforcement.

The first concern of Law is to prove the facts on which justice is to be dispensed. We have shown elsewhere *(Réalisme et idéalisme en droit civil*, in "*Mélanges Ripert*," I, page 84 *et seq.)* how the progress of science is furnishing us with more and more accurate means of ascertaining the truth for the purposes of evidence. The whole Law relating to proof may thus be revolutionized by modern methods, thanks to the application of advances in physics, chemistry, biology and experimental psychology.

The whole of positive Law is based implicitly on the legal technique of evidence. The judges and other authorities responsible for applying the Law cannot claim to dispense true Justice unless they are sure about the questions of fact they have to solve. It is impossible to deliver judgment in a case without knowing exactly which of the litigants is speaking the truth, when their statements are contradictory.

Modern techniques equip the judge and the administrative official with infinitely more reliable, more elaborate and more accurate means of discovering the truth than Law has had in the past.

Taking Civil Law alone, it is surely obvious that, in the sector relating to family matters, all the provisions relating to proof of affiliation in the *Code Napoléon* are already out of date, in view of the progress made in our knowledge of biology (cf. our comments in *Métamorphoses économiques et sociales du droit civil d'aujourd'hui*, 2nd. edition, No. 210). In the matter of contracts and obligations, it is surely clear that the rules laid down in the same *Code* regarding the Law of written evidence are becoming obsolete because of the use now made of telegraph and telephone, microfilms, and mechanical processes of recording speech. And all these developments are only the beginning. It is not improbable "that progress in photographic processes, television, the recording of sound-waves, radar, and the possible discovery of other waves, other forms of radiation and other ways of recording them, will some day make it possible to reconstruct actions, words and intentions, exactly as they occurred or were manifested in the past, just as present developments, unseen and at a distance, are now being recorded" (*Le droit privé français au milieu du XX^e siècle*, Papers presented to Georges Ripert. Vol. I, "Réalisme et idéalisme en droit civil", page 85).

In Public and Administrative Law, and in Company Law, the various forms of mechanical recording and reproduction and the use of robot mechanisms, providing the administrator with accurate, detailed and varied information at first hand may perhaps make it possible to substitute scientific for conjectural Law. In the past, man built up Law on facts of which he had only an uncertain and imperfect knowledge. The justice dispensed on these ill-determined facts reflected the imperfections of the judge's knowledge. The progress of techniques is gradually remedying the ignorance which originally hampered man's judgment. In Civil Law, in particular, jurists had devoted all their efforts to over coming this ignorance by having recourse to legal presumptions approximating more or less to the truth. The time is coming when they will be able to discard these presumptions in favour of truths scientifically ascertained, on which they may build in confidence.

Nevertheless, there must be limits to this advance in the technique of legal proof, these limits being determined by the very ends which Law has to pursue. This is indeed one of the matters in which the need to prevent technique from stifling Justice is most clearly to be seen.

Law is not only a science. Its aim is not solely to ascertain the truth, but to produce good. Whenever, therefore, the scientific methods most calculated

to establish truth are liable to clash with the aims which Law pursues, it is better to abandon hope of discovering the whole truth than to compromise those aims.

For instance, in our conception of Justice, every human being has an essential and inviolable right not to be subjected to physical maltreatment. Methods of obtaining evidence which, in the search for truth, would infringe this principle, must necessarily be rejected. Certain forms of anatomical investigation *in vivo* and certain ways of influencing the human mind would be tantamount to mutilation, and even the pursuit of truth cannot justify their use.

Similarly, every human being is entitled to consideration for the privacy of his thoughts and feelings; the secrecy of confidential letters and the professional secrecy of the lawyer and the doctor cannot, therefore, be violated by scientific processes without the very aims of Law being betrayed. In the interests of the sacred rights of humanity, certain limits must even be set to the use of television.

It is better to resign ourselves to the indirect injustices which may spring from a judge's uncertainty on points of fact than directly to flout Justice by breaking down the morally impassable barriers which should protect each individual human being.

*Enforcement*

The progress of techniques, which is revolutionizing the Law of Evidence, may also affect another aspect of Law, considered as a technique—the enforcement of the rule of Law or legal orders. This question is of fundamental importance for positive Law, whose function is to place the effective power of the community at the service of Justice. The better that power is adapted by scientific means, therefore, and the more efficient its instruments, the better the Law will be enforced.

The progress of techniques may thus exercise and influence, firstly in connexion with the formation of legal relationships, and secondly, in connexion with the enforcement of legal orders.

1. The formation of legal relationships possibly represents the sector of the Law least affected by the progress of techniques. In this respect, the development of modern science does not appear to have brought about any substantial change in the method employed by jurists; legal concepts and their classification, the regulations regarding invalidity and fictions, are still governed, as Law at present stands, by practically the same technique as that used by the Roman lawyers. Attempts have been made to define this technique and determine its laws more scientifically than in the past (cf. Gény, *Science et technique;* Dabin, *La technique de l'élaboration du droit positif;* Roubier, *Théorie générale du droit*); we are learning to understand the method better, but it was in fact already applied by our remote predecessors.

   The most we can say is that better information is now available on which to base the rule of Law (but this is really due to progress in the technique of evidence) and that penalties are more effective (but, as we shall see, this is really due to improved arrangements for enforcement).
2. The progress of techniques may, indeed, also be important in connexion with the application and enforcement of orders issued under the Law. Yet it must be admitted that the old rules contained in the codes of civil procedure, and the old measures for enforcement, do not so far seem to

have been seriously upset. In a society where technique was fully developed, however, the machinery of enforcement at the Law's disposal would surely be very considerably strengthened. But here, the spirit is more important than the letter. As in the matter of evidence, Law, as the embodiment of Justice, imposes restrictions on Law as a technique. The memory of Hitler's totalitarian legislation, and the traces that it has left behind, should keep the jurist on his guard against the danger of employing compulsion in the service of an alleged rule of Law. Neither propaganda and mass suggestion, nor individual suggestion and the elimination of the ordinary man's free will, nor physical torture, can be considered from the point of view of their efficiency as techniques alone. The only technical advances which can help Law in the fulfilment of its functions are those compatible with the spirit of Law. If any other principle were admitted, Law would lose, from the standpoint of Justice, whatever it gained from the standpoint of technique.

The same conclusion is thus borne in upon us from every side. The science of Law must not advance at the cost of ethics. Technique must always be subsidiary to respect for those human rights which the sages of the East and the philosophers of antiquity knew to exist; which Christianity threw into relief; which even the irreligious today feel it necessary to safeguard as the very soul of Law's creed; and which have recently been proclaimed once again in a solemn declaration by the United Nations.

### THE INFLUENCE OF THE PROGRESS OF TECHNIQUES ON LAW, FROM THE STANDPOINT OF THE USE LAW MAKES OF THOSE TECHNIQUES AND OF THE SERVICE IT RENDERS THEM

Law is designed to serve man in all his manifold activities. On the one hand, as the scope of those activities broadens, Law has to cope with ever more extensive tasks. On the other, as man's activities grow more varied, *pari passu* with the progress of technique, Law itself becomes more diversified.

We have previously had occasion to point out how scientific progress, by gradually giving man mastery of the forces of nature, has altered the very structure of Law:

"Man is mastering energies on an ever-increasing scale; the process began with steam, going on to electricity, and today we witness the splitting of the atom. Man must adapt himself to the scale of the forces he has thus conquered. Individuals cannot control them; only communities can do so. The individual contract, on which the whole technique of the *Code Napoléon* was based, is radically challenged. Man must equip himself to deal with the new situation, firstly by combining with his fellows, and secondly by concentrating the material means of production. Capitalism develops and then gives place to collectivism, which in turn gives place to planning" (*Métamorphoses économiques et sociales du droit civil d'aujourd'hui*, 2nd edition, No. 43).

Legal provision has to be made for all these new factors and, in this respect, Law is today serving a technique in which contemporary developments are proceeding at a great rate—the technique of economic planning. There is a danger that we may find another and infinitely harsher technique creeping in-the planning of humanity.

1. The technique of economic planning is still in its early days. Its adepts—the modern economists—are still far from having formulated its complex and

variable laws. Nevertheless, in the very nature of things, this technique is an inevitable feature of societies in which man's control over the tremendous forces he is binding to his service, and over the product of those forces, must, in the interests of consumers, be organized at a high level.

It is therefore necessary to define the processes of Law whereby the contracts into which every producer, middleman and consumer enters may be brought into line with the plan. The success of the plan depends entirely on these legal provisions (cf. our comments in *Métamorphoses économiques et sociales du droit civil d'aujourd'hui*, 2nd edition, Nos. 109 *et seq.*).

Just as, during the nineteenth century, a legal technique had to be developed to embody the technique of capitalism and the joint-stock company, economic planning can have no real effect unless it is embodied in a form of law which can be enforced (cf. Rivero, *Le plan Monnet et le droit*, Chronique Dalloz, 1947, page 129). Admittedly, the technical means used to make men conform to the plan may vary considerably and may show more or less respect for the principle of freedom. Here we have the same problem again—the problem of safeguarding the ends for which Law is designed, as technique improves. If the real basis of the plan is human slavery, the so-called Law to which it leads is the negation of Law. Law is unknown in the anthill or the beehive, where its place is taken by automatism.

2. In the anthill and the beehive, planning is not confined to the collective wealth on which the community depends for its food. Its scope is far wider, and extends to the very life of the species. Some people, carried away by the dizzy rate of advance in modern biology, have already conceived the idea that it will be possible to control the future of the human species itself. In the name of so-called scientific eugenics, a dictatorship may well aspire to a type of technical planning which places the fundamental assumptions of Law in far greater danger than does economic planning.

Hitherto, we may say, the human body appears to have been regarded as holy, and love, as the means of perpetuating the species, as the holy of holies. But once the secrets of life are laid bare by the bilogist's techniques, the sancturary is in danger of desecration. It may be thought that the final aim of these techniques is to mould human life itself into the desired form regardless of the infinite difference of value which distinguishes it from the animal creation. On the unverified assumption (which is nevertheless an article of belief) that not only physical characteristics but intellectual qualities and moral virtues can be transmitted, in man, in accordance with the scientific laws of heredity, and can even be developed to a higher pitch of perfection, wild schemes for an all-embracing plan of eugenics, for instance, may be entertained. Hitler's efforts on behalf of the chosen Germanic race tended inevitably in this direction; and in *Brave New World*, Aldous Huxley forecasts future developments along these lines (cf. also Raymond Rambaur, *Le drame humain de l'insémination artificielle*).

The technique for whose promotion this monstrous distortion of Law was introduced would be the direct negation of Law. To plan and set up a public breeding service, to mechanize love in conformity with a scientific plan designed to produce an improved human strain, and to enforce this plan on the individual men and women who make up the real human race, with all its miseries but all its greatness, would be the basest subjugation of Law to technique.

Law is not only the servant of technique, however, with the concomitant

function of restraining, when necessary, its overweening ambitions. It also uses an increasing variety of techniques for its own purposes, and is thus involved in the contemporary trend towards specialization of knowledge and practice.

Growing specialization is an essential feature of the progress of techniques and, as a result, the cultured gentleman of the past, who combined in himself all branches of human knowledge, is now an extinct type.

The total sum of knowledge is too great, and the means of applying it too many, for any single man to master the whole. Techniques are thus becoming more and more specialized. And, because Law has to use specialized techniques in carrying out all the tasks allotted to it by present-day society, it also is compelled to specialize.

In the legal systems of antiquity, jurists were competent to deal with every branch of their subject. The same is almost equally true of the medieval jurists and the humanists who wrote on Law during the Renaissance. As our modern societies came into being, however, the first signs of the general distinction between Public Law and Private Law were seen. While Bodin, in his *Traité de la république*, dealt mainly with the former, Domat's great work on *Les lois civiles* differentiated clearly between Public Law and Private Law, concentrating principally upon the latter.

But this first rudimentary specialization is as nothing when compared with the specialization which the progress of techniques necessitates in Law today.

Historically speaking, Maritime Law was apparently the first branch of Law to be distinguished because of the special techniques involved—navigation and sea trade; this distinction has been familiar almost since the Middle Ages. Later on, under the general heading of Private Law, the special techniques of trade in general made it necessary to treat Commercial Law separately. When the *Code Napoléon* was drawn up, specialization had already reached such a pitch that five distinct codes were necessary. Meanwhile, Public Law was also developing its own sub-divisions, and the syllabuses of the French Faculties of Law in the early nineteenth century were all based on this scheme of division. Gradually, however, the need for new University Chairs became more and more apparent, and Constitutional Law and International Law, both Public and Private, made their way in. At present, there is a veritable proliferation of the branches of law-teaching. More and more specialized techniques have developed in this field since the beginning of the twentieth century, and new Chairs are accordingly necessary. As a preliminary, concomitant or sequel to the establishment of these Chairs, increasing numbers of new specialized books are published.

Industrial Law is distinct from Rural Law. Yet both of them, in their own particular way, are influenced by Labour Law and Economic Law. Transport Law, which is a special branch of Commercial Law, is becoming further specialized in its turn, Aviation Law being the most recent new branch. Social Security Law and Private Insurance Law are both developing along distinctive lines of their own, not to mention the various branches of Public Law, including Taxation Law, which has broken away from Financial Law and relies on an ever-increasing variety of more and more elaborate technicalities.

At the same time, the number of separate codes is growing to an extent undreamt of by Napoleon. In France, in addition to special codes on nationality and pensions, and one or more fiscal codes, we even have Corn Laws and Wine Laws. In every field, specialization of techniques necessitates division of labour among jurists, just as it does among experts in all the other branches of knowledge and technique.

As, however, Law partakes of ethics as well as of technique, this specialization gives rise to problems of particular difficulty for both legal experts and the ordinary citizen.

1. The problem for the legal experts is to weld all these specialized branches into a co-ordinated whole. This is an imperative duty, since they are responsible for dispensing justice, which is, in the nature of things, a single entity. If jurists lose the capacity to deal with the whole body of Law, and resign themselves to allowing separate branches of Law to grow up side by side, each with its own terminology and its own closed field of activity, what will become of Justice? The judge and administrator, who are the guardians of Justice, must be something more than mere specialists. Social order depends on the overall co-ordination of the specialized codes of Law; and incidentally, as these codes develop, they tend to overlap more and more. Indeed, we may well wonder today, for instance, what has become of the original distinction between Public and Private Law (cf. our own *Du droit civil au droit public* and Rivero's *Droit public et droit privé—conquête ou statu quo*, Chronique Dalloz, 1947, page 69).

   In their efforts to weld the several specialized branches of Law into a general system of Justice, jurists, judges, administrators and lawyers will probably find it necessary to use a more elaborate technique of collation and classification and, indeed, of mechanical recording and duplication. The task is not easy, for Law is an elusive thing, hard to reduce to techniques involving a degree of mechanization. But it is a task which cannot be shirked, though technique must always be kept subordinate to Justice.
2. For the ordinary man, there is another danger in Law's trend towards increasing technicality and specialization. It threatens to aggravate still further the already considerable difficulty of understanding Law. In his relations with the Courts and the Exchequer, the ordinary man already tends to criticize the jurists for specialization, which is abhorrent in his eyes, because he regards Justice as a simple thing. Jurists may well be compared, in fact, to a brotherhood of initiates; for, as we have shown above, Law is essentially a technique and therefore, to a certain extent, a closed book to the ordinary man. And this impression is likely to become much stronger as Law itself is sub-divided into special branches, in each of which varying techniques necessitate the use of terms and methods which the uninitiated are bound to find more and more difficult to understand. How can this difficulty be overcome? How can we remedy the mistrust it breeds in the man who feels that, once in the hands of lawyers, he will forgo not merely justice but his freedom of action? These questions are not easy to answer. It seems imperative to try to develop a sort of intuitive synthesis out of all these specialized forms of Law, so that, even if the ordinary man cannot grasp the refinements of the special codes, he may at least have some understanding of their general significance.

## THE INFLUENCE OF THE PROGRESS OF TECHNIQUES ON LAW, IN ITS RELATION TO THE TECHNOLOGICAL SOCIETY

Apart from the question of the effect of Law on techniques and the effect of techniques on Law, there is thus a clear need for an investigation of Law in relation to the new type of humanity developing as a result of the progress made in techniques. The whole atmosphere of the world in which man lives today is technical, and man is influenced by his environment. All we wish to

do here is to draw attention to three aspects of this problem: the standardization of the human race, the new concept of space, and the new concept of time.

The men of old presented a picture of extraordinary diversity. In the first place, the difficulty of communication between members of the several groups caused each group to develop along its own lines. In the second place, the conditions in which not only each group but each single person lived were so much determined by local and individual peculiarities that differences were naturally emphasized. There was no standard of humanity, because material things themselves were not yet standardized.

Today, everything is becoming standardized—the material background of life and, with it, man himself. Law naturally follows suit. In any case, it is the function of Law, in one sense, to secure a certain standardization of the human race.

In the past, the number of laws was limited and, subject to those laws, each man and each family worked out their destiny in the measure of freedom which their material difficulties allowed. Now, when these material difficulties have been largely overcome, Law takes their place as an agency restricting human liberty. And Law, by its very nature, tends to restrict by standardization.

This tendency is emphasized by the technical atmosphere in which mankind now lives. The Highway Code may be taken as an example. The aim and effect of the code is to develop similar reflexes in all drivers, as a result of compliance with its provisions. By deliberately developing automatism, it thus, to some extent, reduces them to a single standard.

The same tendency is to be seen, in different forms, in all the regulations whose multiplicity is one of the features of present-day Law. It is the inevitable result of the technical atmosphere in which man lives.

These regulations are bringing about a profound change in the old system of individual contracts. As contracts became increasingly technical, it is increasingly necessary for them to be covered by regulations. The purpose of these regulations is no longer, as in the old contractual legislation of the *Code civile*, to restrict man's freedom in order to safeguard it (cf. our comments in *Métamorphoses économiques et sociales du droit civil d'aujourd'hui*, 2nd edition, No. 16). They are designed to stamp human relations into a standard pattern. For instance, there is a general increase in the number of model leases on partnership deeds, insurance policies or contracts for the supply of gas and electricity, as well as all the collective contracts and regulations (*actes règles*) so dear to specialists in Public Law.

This standardization is, incidentally, in no way incompatible with the specialization of Law we were discussing above. Jurists specialize for the greater efficiency of each of the several branches of Law. If, in an age of standardization, Law is to be efficient, it must presumably fix standards to which men must conform. This is the cheapest way of establishing an order which can be easily maintained. Admittedly, this process is less easily applicable to man than to things. Nevertheless, it has always been used in Law regarded as a human science, even though it may to some extent have been concluded. It has rightly been pointed out that, in ancient Rome, the *bonus paterfamilias* represented a recognized standard of conduct. As techniques develop, legal standards are sure to be generally and systematically applied, with unprecedented exactitude, in the interests of saving space and time, which

are taking on a new significance in the eyes of the modern world as a result of the influence of those techniques.

It is a commonplace to point out how far modern technical developments have narrowed down the space in which mankind moves. If we take ease of communication as a criterion, New York is now closer to Paris than Bordeaux was at the time of the *Code Napoléon*. This contraction of space, which is now crowding us all together, must affect the development of Law. Once the iron curtains and customs barriers which still separate the peoples disappear, International Law will soon be more important than Municipal Law, in proportion as legal relationships involving family and financial ties are formed across the old frontiers. The national, domestic system of legal rules is becoming generally, out-of-date. Everyone is dimly aware of this, but that does not mean that new wine can easily be put into old bottles, by substituting International Law for Municipal Law.

We shall not dwell, in this context, on the difficulties of unifying, or simply bringing into line the various national systems of Law, owing to the prevailing atmosphere of international rivalry. Unification and standardization are, however, so characteristic of the trend of history and world affairs that they are sure to triumph; not being a prophet, I shall not try to predict how, or to what extent. It is probable that two procedures already outlined will be followed in turn: unification of the provisions of Municipal Law, and unification of the rules concerning conflicts of laws. The contraction of space as a result of technical progress must, however, necessarily lead sooner or later to a dynamic approach to the problem of removing the conflicts and differences between the Law systems of the various countries.

It is probable, incidentally, that this contraction of the world will reduce the number of independent states. The progress of techniques already tends to exclude all but two giants from the international lists. As things are at present, all other states are compelled to unite with one or other of these two nations. This fact alone is already creating a radical revolution in every aspect of International Law.

Not only space is shrinking, however; the length of time for which it is possible to legislate is also becoming shorter. The increasing speed of history is one of the most striking features of the modern world, and it has a very considerable influence on Law (cf. our note on *Le droit et l'accélération de l'histoire*, Chronique Dalloz, 1951, page 29). The jurists have to transpose into their own sphere the philosophical observations of Daniel Halévy, published in 1948 in his short *Essai sur l'accélération de l'histoire*.

There may well have been a lapse of 500,000 to one million years between the first prehistoric man and the discovery of the art of writing; within that period, the successive ages grew shorter and shorter, from the Palaeolithic, through the Neolithic, to the Bronze Age, marking the first large-scale use of fire.

Thereafter, man took only 8,000 or 10,000 years to progress from the first written signs to the modern industrial era—the time when the steam-engine set the wheels turning. From then onwards, social change and political events seem to be swept forward by the pace of economic production.

In particular, it has taken man less than 150 years to leap from the dawn of industrialization to the atomic age, in which explosion is the order of the day.

The period in which we live is therefore entirely governed by this colossal

acceleration, in which we may doubtless take pride but which is also a source of anxiety.

The Positive Law jurist, for his part, is caught up in this acceleration of history because of the data on which his work is based. The progress of techniques so often sweeps away his work and makes it necessary to start afresh that works on Law are now obsolete within a few years. The contemporary jurist probably has as good a grasp of his subject as his predecessor in classical Rome had, but what chance of survival do his works enjoy compared with the immortality of say, Gaius? What will be left, in 10 or 15 years, of what is written today on the shifting sands of our institutions?

This acceleration of time, due to the progress of techniques, is thus revolutionizing Law. Law may well lose confidence and wonder why it can no longer keep up.

The jurist and the sociologist must necessarily measure time and its acceleration in different ways. The sociologist can plot graphs of the rate of human evolution without delay, but the jurist cannot embody it in Positive law until it has been conditioned by the moderating, co-ordinating and corrective influence of the legal method. In the process of transforming life into Law, the jurist's professional function is to temper the panic engendered by the acceleration of history.

He is responsible for setting human relations on a secure foundation, and security can only result from stable and categorical laws. Under the legal system, everyone knows that all must obey those laws; and therefore man, in his social relations, can see the path before him. He can estimate the consequence of his acts in advance, and is therefore able to organize his life. The Law imposes obligations on one individual but imposes the same obligations on others, and thus safeguards man's liberty. Thanks to the Law, man can face the future in confidence and freedom.

As the natural defender of this security, the jurist aims at securing a certain degree of stability in the legal institutions he sets up. He knows that the ordinary man must be the victim of chance and uncertainty when Law and the laws are liable to change from one moment to another with the gathering speed of history.

The jurist therefore serves as a brake and a moderating influence. He demands a chance to fashion a reasonably stable order underlying the whirling kaleidoscope of events. The task is difficult and calls for a humanistic outlook —or, in other words, for due consideration for what is enduring in human nature and human aspirations amid the metamorphoses of society.

The jurist is aware that Law must master techniques in order to reduce the terrifying pace of developments to human proportions. In a world under the dominion of techniques, Law still offers mankind a hope of salvation.

Modern man is living through the most interesting, though certainly not the most comfortable, age in human history. Each individual, when he feels how his fate is bound up with all the things now dying or coming to new birth, may well quail. But his duty as a man is to face the future with hope and determination. With the control which technique gives him over the forces shaking the world, man can and must steer onwards through the stormy seas. And the jurists, at the helm, must be sound in their knowledge of sea and stars.

# WESTERN TECHNOLOGY AND THE AUSTRALIAN ABORIGINES

A. P. Elkin

The Australian aborigines are dark, chocolate-skinned people of varying, but usually medium, height, with black, wavy to curly hair, deep-set eyes and, as a rule, narrow and retreating foreheads. Generally classified with the aboriginal hill tribes of southern India, they probably became differentiated in the islands north of Australia. Moving into that continent, their food-gathering, hunting and fishing economy was, and has been, the basic factor in their adaptation. This has involved living, foraging and hunting in small groups, often long distances apart. To be organized in large groups would quickly strip a locality of natural foods and either kill or frighten off the game, as the aborigines realize during ceremonial and social gatherings. Consequently the process of occupying Australia was one of hiving-off from group to group, each one related by descent to those behind it, and maintaining contact by intermarriage and exchange of articles.

Obviously too, the density of population, that is the area required to sustain a food-gathering group of families, depended on the rainfall and on the natural food-supply throughout the annual cycle. Consequently, the tropical coastal regions and parts of other coasts with a regular rainfall or at least with constant rivers, carried the densest native population, and the arid central and western regions the sparsest.

Several contrasts appear in the life of the peoples of the different types of habitat. In the former, life is more settled. Permanent adjustment has been made to the environment. There is neither need nor desire to leave it. Groups can meet together more often and for some weeks or even longer, not having to disperse very far during the working hours, that is, if the season is favourable. Indeed, it is common to see quite large camps of from 60 to 150 and even more persons, belonging to different clans and even tribes, foraging in different directions, but not necessarily only on their own clan or tribal territories. In this type of good country, too, while there are names of many clans, tribal names and distinctions are hard to determine. In fact, these are not of great importance.

On the other hand, in the drier regions on the borders of the tropics or along the inland rivers, tribal areas are both large and distinct. Within these there are usually well-defined districts, over which certain clans or other sub-groups have the chief food-gathering rights, and to which they are bound by mythological and spiritual beliefs. These small groups spend most of their time in the food-quest apart from each other, only meeting in large bodies in good seasons. As a result, difference of dialect, and even of custom, arises within one tribe.

Finally, in the arid desert regions, the picture is of slow but continuous migration in a general south-easterly direction in search of oases and better country. The moving groups, stationary for a few generations or less, are linked by mythology not to regions, to tribal or other territories, but to ancestral roads along which the heroes of old, and their own forbears, ever moved forward, only occasionally and temporarily moving back north. In such a region, language, custom and belief vary little over vast areas, and because

of the constant mobility and the struggle to live, the cultural heritage is meagre.

## INTELLECTUAL AND TECHNOLOGICAL ADAPTATION

In each type and sub-type of habitat, the Australian food-gatherers have built up throughout the generations a detailed body of knowledge of the local environment and have developed skills in exploiting its food resources. The food-use of everything that lives, grows and moves has been learnt, and processes, some of them quite involved, have been developed for removing unpleasant or dangerous properties from certain fruits and roots. The times or seasons, the places and conditions for finding food and game, are known. So too, are the signs or interrelationship of natural phenomena and species. The behaviour of forms of life, some of them of no direct value in themselves, have become, through association, indications of weather-changes or of the increase or appearance of animals or plants which are edibly important. It is this detailed and associative knowledge which explains the true saying that Europeans, never mind how clever, perish in the Australian bush in spite of the presence of sufficient food and water around them, but not recognized.

In addition, craftsmanship of no mean order is associated with the food quest. It is not merely a matter of collecting roots (yams); some creatures must be dug out, so a digging stick is made, and a wooden dish for carrying what is found. Tree-honey is obtained by cutting the bough open or off, stone tomahawks with handles being made and used for this and other purposes. The larger marsupials, emus and bustards, are not only tracked, wind-direction being studied and camouflage used, but the spear is hurled truly and forcefully with the aid of a spear-thrower which extends the hunter's arm and adds to the leverage available. The spear itself, simple though it may seem, requires technical ability on the part of its maker, who works according to the tribal pattern. The shaft must be straight and well-balanced, and the point of wood or stone, whether barbed or not, firmly fixed. Heat is used for bending and straightening the shaft, and a stone chisel for smoothing it. Likewise, the making of stone spear-points by knapping or pressure-flaking, is a skilled process. Stone flakes with a sharp edge are used for cutting food, and nets, lines, hooks and special spears for fishing. The boomerang, especially the returning type, which is sometimes used for bringing down birds as they fly overhead in flocks, is a work of highly skilled craftsmanship. This weapon and the spear are also used in fighting, while shields and clubs are only made for that purpose.

## SOCIAL AND RELIGIOUS ADAPTATION

The aborigines' adaptation to their environment is however not only ecological, intellectual and technological, it is also social and religious. Conformity is required to patterns of behaviour which have been proved satisfactory for mutual existence. It is sanctioned by mythology, and enforced by punishments which are ordered or allowed by the elders. This behaviour is based on the internal and external relations between members of the food-gathering groups. Its basis is reciprocity, correlated with kinship-groupings. This includes respect for each other's few possessions, mutual assistance under prescribed

circumstances, and the duty of making gifts of food and implements, weapons and articles of adornment.

In spite, however, of knowledge, skill and social co-operation, the rain or flood sometimes fails and the normal food supply does not materialize. Such is the lesson of experience. It is a contingency which has occurred in the past more than once, with disastrous results. Tribal existence depends on forestalling, shortening or enduring it. The primary effort is to ensure that is does not occur. This is done by re-enacting in ritual the creative and formative period, that is, the acts which were associated, according to myth and doctrine, with the birth or first appearance in the region of the desired species and phenomena. These rites are often performed at sites directly connected with that formative epoch; or the places as well as the heroic deeds are represented in symbol, art, chant and act.

Such in brief outline was—and still is, in a few regions—the aborigines, integrated adaptation to the environment: ecological, intellectual, technological, social and religious.

## PHASES OF CONTACT AND ITS EFFECTS

From 1788 onwards, European settlement began at selected coastal centres, on the bases of imports, of food-production and of pasturage. It was rapid and comparatively dense. The food-gathering aborigines, unaccustomed to competition or invasion, and requiring all their country in order to live, were almost completely deprived of the means of existence before they could re-adjust themselves. Neither their body of knowledge, their skill and technical equipment, nor their social organization provided a means of meeting this ecological disturbance and this contingency. They became hangers-on on the outskirts of what had been their own hunting, social and ceremonial lands. Pauperism was their lot. The inadequate rations which they received from the white man did not make up for the loss of their natural foods, and this loss, together with alcohol, clothes and diseases, for none of which their experience or any mythological precedents had prepared them, brought about their extinction very rapidly. Some mixed-blood descendants remain, but very few full-bloods.

The spread of settlement into what became the rural regions was a slower process. Farms and pasturages gradually pushed out into tribal lands. The aborigines frequently gathered (stole) some of the settlers' crops and speared sheep and cattle, for their own best food-gathering and hunting areas were naturally the first to be occupied. The settlers, however, allowed by the Government to take up the land, or at least not prevented from doing so, resented the aborigines' depredations, and clashes occurred. In some cases they received official sanction and help for their action; often they took the law into their own hands. With guns and force generally, the settlers established their position. Many aborigines in most rural areas were killed. The remnants became wanderers, roaming from one district to another in their own tribal territories, working occasionally, but homeless and aimless. In different parts of Australia from 1860 onwards, pity began to be felt and Protection Policies were drawn up; but these were only designed to protect them from further ill-treatment and injustice, and to dole out rations and blankets—in short, to smooth their dying pillow. Such was the comfortable rationalization of the era. Few full-bloods remain in these older settled regions, though most of the 30,000 mixed-blood aborigines belong there.

As the battle was won in the rural farming and denser pastoral regions of the continent, Europeans spread further with their flocks and herds, but into regions both tropical and arid, where to this day only sparse pastoral settlement prevails. The settlers, few in number and widely separated because of the need for large grazing areas, did not, to the outward eye, occupy the whole of the tribal territories into which they intruded. The aborigines could still go about their own affairs in much their old way over most of their country. It was only as the settler's cattle found or were driven to the permanent waters and best feeding grounds that clashes arose, for these were the natives' main camping and hunting grounds. They inevitably disturbed the cattle, and occasionally speared them. The settler's aim was to keep the aborigines away from such places. On the other hand, being almost completely dependent on the local natives for labour, he soon realized that if he antagonized them, he would be helpless. Neither driving them away, nor killing nor jailing them would get the stock mustered, branded and despatched to market. The settler therefore encouraged some of the able-bodied men to work for him in return for rations, tobacco and some clothes. But this meant that older men and women and children soon camped near the settler's stockyards, and that what he paid to his workers went round the camp. He could do nothing about these dependants.

The aboriginal elders and leaders had learnt that hostility did not pay—that they could not get rid of the white intruder and his cattle. They also realized that the settlers, and later the pastoral company managers, depended on them for labour. Moreover they felt a growing desire for the white man's food and some of his goods. They therefore regarded the settler as part of the changed environment to which they had to adapt themselves. This they did by sitting down on the settler, and supplying workers who did just the minimum to keep his place going so that they would get their share of food and goods. Many a small settler has recognized that he was really working for the natives, but he had himself become so adapted to the situation that he would not be content elsewhere.

Thus a state of equilibrium was reached, broken only occasionally by loss of self-control. But it did not make for progress, either for the aborigines or for the country. The latter was not well worked, and the local native population decreased on almost all pastoral stations. The changed diet and manner of life, and the fundamental loss of purpose were factors involved. Women frequently objected to rearing children merely to be used by the white man.

This state of more or less adequate mutual adaptation (intelligent parasitism on the part of the aborigines) prevailed on the frontiers of settlement until the 1930's, and indeed still prevails in some parts. During the 30's, however, positive policies were evolved in the States and in the Northern Territory, which since the war have been increasingly put into operation. They are designed to ensure the aborigines' physical, education al and economic progress. The goal is assimilation into the general economic, social and political life of Australia. Efficient health services now operate in the north and centre of the continent, as well as in the settled regions. New employment regulations for aborigines have come into operation, particularly in the Northern Territory and adjacent regions, governing wages, housing, sanitation and the prices of goods sold in the settler's or pastoral station stores. In the same Territory in particular, a forward policy of education of full-blood children has been set in operation by the Commonwealth Office of Education, and—most significant—the Commonwealth Government's extension of child endowment to full-blood children living in institutions such as missions, State Homes or

even on cattle stations under certain conditions, has proved, in some cases, that the aborigines can increase in numbers. This is the effect of providing adequate diet for, and care of, expectant and nursing mothers, as well as supplementary foods and clinic services for infants and children.

Associated with these forward moves in policy is the growing realization by employers of aboriginal labour, often against their former custom and prejudices, that improved conditions of employment and of life generally for the aborigines will be to their own interest. In addition, particularly since the war, as a result of contact with, and work for, the fighting services, the aborigines in the north have shown an increasing appreciation of European culture, especially of its economic, recreational, medical and educational aspects. The white man no longer just symbolizes, or is a purveyor of, flour, beef, tea, sugar, tobacco, razors, knives, clothing and a few other articles. The younger aborigines are on the march to become part of, or to play an intelligent part in, the new way of life. This is the turning point for which some of us have been seeking. It is the tide in the affairs of men which must be taken at the flood.

## PART-ABORIGINES

Every year in different parts of Australia a few persons of part-aboriginal descent pass quietly into the general community; they are either light-skinned, or have made good by steady work and independence. Some of these obtain certificates of exemption from acts and regulations governing aborigines. This enables them to apply for the State franchise if they do not already possess it, to purchase alcohol, or in the cases of persons of over 50 per cent aboriginal descent, to receive Commonwealth Social Service Benefits. For the purpose of these benefits and of the Commonwealth franchise, the Commonwealth regards half and lighter castes as full citizens. In New South Wales, Victoria and South Australia, all persons of whatever degree of aboriginal descent possess both the State and Commonwealth franchise.

About 40 per cent of acknowledged part-aborigines live in the poorer parts of cities and country towns or on the outskirts of the latter. The conditions are frequently unsatisfactory, but they regard themselves as independent, and when there is no economic depression, are able to obtain plenty of employment—the men mainly unskilled work in the towns, and farming and pastoral work of various kinds outside the towns. In cities they are mostly employed in semi-skilled tasks in factories, but some work as artisans and others as labourers. Females in the country do domestic work mainly, but some are now working in shops, and a few have become nurses and teachers. In the cities, many work in factories.

About 20 per cent of all part-aborigines live on Government Settlements under a prescribed degree of control. In some cases, as in Queensland and South Australia, these communities are industrialized, the men learning trades, and working for wages on the farm or cattle station, or in the sawmill, workshop or factory connected with the Settlement. In New South Wales, these Settlements are really only managed communities from which the employable men and women go out to daily or weekly work. Schools, hospitals, stores, churches and recreation facilities are provided.

Finally, in New South Wales in particular, there are many aboriginal reserves, on which a total of nearly 3,000 part-aborigines live, often in houses provided by the Government, under the somewhat distant supervision of the

police, or of a schoolteacher if a special school has been found necessary. The men go out to work. This scheme is a stage along the road to complete independence.

The problem of the part-aborigines is social and psychological. In country districts prejudice against them is marked, even to the extent of not wanting the children at the State schools. This causes an inferiority complex, with the result that many do not sustain the effort to make a success of the work they undertake. Thus a vicious circle is established. Further, with very few exceptions, they have not tried to establish themselves as independent farmers or tradesmen, although Administrations are encouraging them to do this. In some States, too, the policy is to build standard houses in country towns, to be rented or sold to those part-aborigines who show that they are likely to live as self-respecting citizens.

In the larger cities, particularly in Sydney, there is little prejudice against these people. Their children attend the State schools, and no work of which they are capable is denied them. Some are living in good houses, even obtaining them in general housing schemes. Many, however, are congregated in congested areas so as to be together, and also because there is a housing shortage.

### FULL-BLOOD ABORIGINES AND TECHNICAL CHANGE

There are about 50,000 full-blood aborigines in the sparsely populated regions of Australia. Given full implementation of present policies with regard to health, education and employment, depopulation should be arrested, particularly as they desire more and more to share in the material benefits of our economic system.

This desire, as already noted, is not new. The advantage of iron and steel over stone for implements and weapons was recognized in the early days of contact, whether with Macassans in Arnhem Land or with Europeans elsewhere. Ready-made axes and knives not only saved all the time previously required for making these articles from stone, but lessened the labour and time required for manufacturing all wooden implements, weapons and objects, from spear shafts to boomerangs, and from dishes to canoes. Stone chisels and engravers were still used, but gradually gave way to blades and points of iron and stout wire. In some regions too, iron and wire were used for spear points, harpoons and fish-hooks. Skill and time, however, were still required in the processes of manufacture, and also in food-gathering and hunting. Ritual too, was still believed to be necessary, with its severe call on time, thought and physical energy.

Thus, though iron made life somewhat easier from a technical point of view, it did not cause a revolution either in the way of life or in the standard of living. It was included in the system, and was sought, as in earlier days suitable stone was sought. Any pieces or type of iron which could be obtained from the white man or from his property were used. Sometimes hours of laborious work with stone tools were required to shape it, but the finished article had a lasting value which the stone tools did not possess. In other words, with the purpose and design in their minds, the aborigines showed themselves capable of patient industry and of some technical achievement.

The significant social change came when the aborigines saw that they could obtain meat without making spears and hunting, flour without gathering and grinding seeds, and sugar without running bees to their hives and chopping these down or out. The only requirements were to sit down on the settler or

missionary and do what he wanted—to a limited extent. Other foods and tobacco were obtained. In addition, new wants were created by the white man's bias that some clothes should be worn, rugs used in the cold weather, and ground sheets by the stockmen. Matches, too, saved fire-making or carrying lighted fire-sticks; and leather straps, the necessity of making native rope. Finally mirrors, combs and other luxuries became desidered.

Thus, instead of being parasitic on nature, with all the effort, skill and knowledge this required, the aborigines became parasitic, or at least dependent, on the white man. In this way they obtained enough to keep them alive with a minimum of effort. Instead of hunting, the young men rode after the cattle or sheep, and liked it. Instead of making implements and weapons, except occasionally, the men helped the white man erect buildings and fences, and—in later years—assisted him with his windmills, engines and even motor cars. The women, instead of foraging for roots, seeds and small animals, worked in and around the settler's or manager's house, cleaning, cooking, and carrying water in kerosene tins to the vegetable garden. The bigger the station, the more organized and varied the types of work.

Clearly this was a revolution in the aboriginal way of life, a revolution which has occurred on hundreds of pastoral properties in Australia; a revolution caused by the intrusion of a food-producing and highly technical economy—a revolution from which there could be no turning back. Aborigines whose tribal territory has been given over to pastoral pursuits for a couple of generations, have changed from semi-nomadic, separated groups of food-gatherers to a settled and more compact group associated directly and indirectly with that industry. Their corroborees (or public dances and songs) and sacred ceremonies are held near the main camp. Except for brief changes they have little desire to roam or "go walkabout", as it is called. Mustering, branding and droving cattle have replaced the movement and excitement of the chase. Moreover, the country is no longer reliable for food-gathering and hunting, the cattle (or sheep) and horses having in dry times eaten it out, and the marsupials and reptiles having been starved out or frightened away. The aborigines' lot is henceforth cast with the white man and his means of livelihood, and this they have begun to recognize.

Opportunely so, because the white man's successful use and development of the usable inland parts of both tropical and arid Australia depends on the intelligent and willing labour of the aborigines—not on the static condition of equilibrium referred to above.

Therefore the present positive policies, their implementation and extension, must aim at ensuring the aborigines a just share in the pastoral industry or in any other industry which is developed in those regions where they have passed from a food-gathering economy to a settled way of life; mainly as an adjunct to the pastoral industry, though in some cases around missions and townships, where they provide labour. Moreover, they have not only passed from the use of stone to iron tools, but to familiarity with mechanical equipment of many kinds, windmills and road graders, engines and electric light, motor-cars and aeroplanes. When sick a flying-doctor comes; if arrested the policeman takes them in a motor vehicle; if they go somewhere along a road, they are unlucky if they are not given a lift in a passing lorry.

The mechanical side, however, is not only a matter of interest and use. Aborigines have shown that they make good technicians and mechanics. Given the training, based on good education and a growing understanding of responsibility, they will acquit themselves well. Further, experience on some stations and missions, and in Army Labour Corps, has shown that they

quickly appreciate hygiene, housing, sleeping off the ground, eating at tables and caring for their clothes; especially when this is associated with just conditions of work, and with what they regard as adequate reward.

Finally, one other very big change is on the way as a result of the change of economy. Whereas authority in the past rested in the elders, through the secret life of which they were the masters, it is now passing to the head of the stock-camp, to the boss on the cattle station, and to the patrol officer of the Department of Native Affairs. The secret ceremonial life, which was integrated with the seasons and the food quest, and took a lot of time, tends to be modified and shortened, and to lose much of its significance. During the transition, some old men try to regain authority through a somewhat inverted use of rituals, or through magic. But it is a losing battle. The future is with the educated, money-earning aboriginal men and women within the general economic, political and legal system, which less than 100 years ago was unknown in the northern and inland regions of Australia.

The immediate problems are the relating of education to economic opportunity, region by region; the stepping up of the pastoral industry to contribute to the world's meat supply, as well as to increase opportunities for what should be an increasing aboriginal population; and the development of other industries or subordinate industries and types of employment and livelihood; and all this in regions where, for geographical reasons, white settlers have not increased and, generally speaking, have not been successful. The problem is partly one of social anthropology; it is also one of scientific research within the region, and of intensive economic study.

## FACING THE PROBLEM

The Council for Scientific and Industrial Research Organization is engaged in research into problems of soil, water, crops and animal husbandry in the northern and inland regions. The use of heavy machinery, to which the war gave an impetus, on roads and stations, and the increasing use of motor lorry and aeroplane for transporting necessities and luxuries to townships and stations, and cattle and sheep (in some circumstances) and other products to the ports or railheads, are giving an impetus to a more efficient development of the country. Directors of pastoral firms and government officials are, not for the first time, concentrating on the economic aspects of the problem of transport and markets. Lastly, research in Social Anthropology[1] has for the past 20 years been concerned not only with the indigenous culture of the aborigines, but also with the changes in their culture in their social organization, economy, and way of life generally, and with the effect of such changes on their numbers and distribution. On the basis of this research, representations have been made, and advice and help given, to the Administrative Departments concerned and to the missions. At the same time public opinion has been kept informed, and to some extent has been influenced by disseminating knowledge of the aborigines and of the problems involved.

The anthropological emphasis is important; whatever foundations be laid for increased development of the centre and north of the continent by scientific research and economic planning, and by the provision of advanced technical equipment, willing and acclimatized labour will be essential. According to past experience, this will not be provided adequately by the white man.

[1] This has been organized almost solely by the Department of Anthropology, University of Sydney, in conjunction with the Australian National Research Council.

He and his womenfolk are not acclimatized, and unless he has a definite vocation, he prefers to live in more populous and more comfortable regions. On the other hand the aborigines are acclimatized; they are interested, realizing, as already stated, that their livelihood is associated with the white man and his enterprises; and they have the ability to undertake the work required. But they must be educated, trained technically, employed justly and rationally, and given the opportunity to be self-dependent within new communities of their own centred on a modern economy. The present Commonwealth education policy should therefore be wholeheartedly pursued and expanded, the themes emphasized being literacy, technical training, and social responsibility in the new age.[1]

# APPRAISING THE EFFECTS OF TECHNOLOGY

HAROLD D. LASSWELL

Among scholars the question is not whether technology has significant consequences for the life of man but rather the what, where and when of such effects. A comprehensive programme for appraising the impact of technology within society will arrange for a continuing survey to be made of current trends; will encourage research activities designed to enlarge our knowledge of the past; and will provide for the pre-testing of the results of alternative policies intended to cope with the consequences of technology.

## THE TREND TOWARD SELF-OBSERVATION

The proposal to enlarge our existing methods of studying society in order to provide for more comprehensive self-observation is in line with important trends in the history of mankind. The idea of studying and recalling the significant features of the current situation is very ancient. It appears to have begun in remote millenia with the scrutiny of the stars and to have continued through the ages until men learned to look at themselves. The grand arc of evolution has been from the study of the not-self to the direct observation of the self. The movement has been from the remote to the near at hand, from the world of physical to social events. The idea of perfecting our existing institutions for the study of technology is no new departure, therefore, but an appropriate extension of a fundamental trend.

## BARRIERS TO SELF-OBSERVATION

Some of the imperfections now handicapping our institutions of self-scrutiny are strictly political. To the extent that the arena of world politics is segregated into two bipolar camps, knowledge tends to be confined to two

[1] The background and principles of the policies at present in operation are analysed in *Citizenship for the Aborigines* by A. P. Elkin, 1944.

non-communicating pools. Hence information of many kinds is not made universally accessible.

In addition, there are more subtle barriers to studying the repercussions of technology. The methods by which the human effects of technology can be studied are often neglected. We are well-informed, of course, in many parts of the globe, concerning many developments such as the amount of electrical energy generated during a given year, or the number of workers gainfully employed in factories. Often we are told in detail about output *per capita*, and the distribution of wages and profits. But if we ask about the thoughts and feelings of those who are directly implicated in technical operations, the data is far from satisfactory. Information of this kind is usually missing from official reports and it is frequently assumed to be unattainable in any systematic way. As we shall presently suggest this view is false. It overlooks the recent advances made in the specialized sciences of man.

Above all, the neglect of human factors acts as an enduring handicap on all policies whose end is to contribute to the dignity of man. Where the intimate perspectives of mankind are not sampled by the proper methods of investigation, policy lacks the information on the basis of which goal values can be clarified, and specific policies appraised. Given the vast scope of modern society special methods are essential if the thoughts and feelings of others are to be given proper weight in the evaluation of public policy.

## THE CONNEXION BETWEEN CURRENT TREND AND SCIENCE

In insisting upon the importance of taking current trends fully into account it is not suggested that we restrict our efforts to a vast exercise in chronology. More than simple chronology is required if we are to fulfil our aim of discovering the results of science and engineering. It is impossible to assess results without making use of a comprehensive conception of the social process as a complex of interrelated and interacting factors.

From a scientific point of view, no doubt, the most refined idea of the social process is that of equilibrium. In an equilibrium the component elements interact with one another in determinate ways. In such a perspective technology is viewed as one factor (or system of factors) which affects other factors in regular ways, and which in return is modified in predictable ways. When, during any period, we have successfully described the equilibrium of society we are able to predict the consequences of changing the magnitude of any significant factor in the whole. This, obviously, is the scientific ideal in the analysis of the place of technology in society.

It is possible to have some degree of confidence in the fruitfulness of thinking about our present problem in terms of equilibrium. The equilibrium idea has often been applied with conspicuous success to specific institutional processes. Perhaps the majority of these successes have been in the domain of economic relations. It is possible, for example, to discover the multiplier effects that may be obtained in a given economy at a given time by infusions of purchasing power in the form of credit. The stimulating effects go beyond the immediate recipients of the new credit units, and spread to those who buy the finished products of the credit receiver, or who obtain wages, profits and other payments from the enterprise. Similar regularities have been found to prevail in politics. In the politics of modern despotisms, for instance, it has been shown that purges are part of a larger cycle which is inaugurated by the piecemeal expansion of the membership of the dominant party, in the course of which

ideological dilution occurs, and arouses defensiveness on the part of the party bureaucrats.

However, it is important to remember that for society as a whole the conception of social equilibrium remains something of a Utopian ideal. The pattern is approximated rather than perfectly exemplified in the studies which have been made up to the present of "society as a whole" at any given time.

We can say, then, that social and historical research has revealed an abundance of regularities in the functioning of parts of society through specific periods. Although these results are sometimes believed to be disappointing when compared with the universals of the natural sciences, many social scientists have come to the conclusion that contextual rather than universal results are peculiarly relevant in human relations. According to this view, when a context is one of meaning, every change in the meaning of a part modifies the whole, and every structural feature of the whole modifies the significance of the part. Since policy is concerned with meaningful goals, the descriptive methods of science contribute immediately and fully when they disclose the finer connexions which prevail in a given culture or at a given cross-section in history.

Hence we do not expect that our inquiries into the impact of technology will necessarily reveal universal laws of social causation, but rather that they will at least disclose regularities which prevail through comparatively short periods over relatively small regions of space.

## SCIENCE, PREDICTION AND FREEDOM

We expect that one result of studying the changing impact of technology upon society will be to provide the means of modifying (or deliberately retaining) the regularities which are revealed in a given context. This way of viewing the contribution of science to society puts the emphasis upon insight rather than prediction or, to use another set of terms, upon freedom rather than forecasting. The point is that when information about the past of social relationships is widely shared freedom of choice is increased; and this may bring with it a deliberate breaking of the routines which have been held to in the past. If the same mode of response is continued, it will be by an act of deliberate choice rather than through inadvertence, compulsion or ignorance.

Assume, for example, that we learn that lung disease of a specific type is on the increase. Assume, further, that we discover that the disease has a restricted incidence, affecting only factory workers, and that of these factory workers, only one category is involved—those who operate lathes using raw materials of a certain kind. Once this information is available, what happens? Perhaps nothing. The workers may be indifferent. Managers may be harried with other worries. No one may stir to prevent the recurrence of the disease in the future. However, if knowledge of the facts is widely disseminated, something may very well be done. The unions may bring pressure for special protection and for higher rates of pay in dangerous occupations. Medical research may reveal that risks in question can be cut to the ordinary level of industrial employment by the comparatively inexpensive expedient of using mechanical blowers at the lathes which immediately dispose of the dust. A number of other policy alternatives may be proposed, including the idea of substituting a harmless for a dangerous raw material. The upshot may be to cut down the peculiar incidence of lung disease in the community. Hence when we re-observe the impact of a certain branch of technology upon the

well-being of the workers, we may learn that a new set of regularities has emerged but that old ones have disappeared. The previously observed regularities, once discovered and disclosed, entered into the social equilibrium, altered the level of enlightenment, and set in motion processes which resulted in the obliteration of the regularities originally discovered. This is a consequence of self-knowledge for policy: it enlarges the potential scope of choice and, therefore, of freedom.

The possible contribution of self-knowledge to freedom in a given situation depends upon the degree to which enlightenment is shared, and the breadth of the base of participation in the making of important decisions. Unless these postulates are fulfilled, the freedom of choice of the few may be exercised to restrict the freedom of the many.

These considerations point to the question which is in many ways the most disturbing of our epoch. Is it conceivable that whatever knowledge we obtain of the impact of technology will be used to consolidate the power of the few, because history has already moved too far in the direction of concentrated rather than dispersed power? Are the sources of general enlightenment so restricted by the crisis that nothing can be done to re-enlarge and to protect public access to information?

No one is in a position to provide a final answer to these questions. But it is possible to introduce a note of caution. We can warn ourselves against transferring to terms like history the formidable properties which have sometimes been ascribed to scientific laws. The laws of society, as we have shown above, are not to be confused with the laws of physics, since the regularities of the social equilibrium are subject to modification by insight. We take note of the fact that a very considerable degree of choice continues to obtain in some countries where an advanced technology exists. It may be that our study of technology and society can provide means of defending and enriching such freedoms as now prevail.

### THE ROLE OF THE REMOTE AND CONTRASTING

An additional word, perhaps, should be said about the connexion between past and present. We have underlined the idea that the survey of current results is more than simple chronology depending, as it must for the appraisal of results, upon scientific analysis. What has not been said is that the validity of the scientific conceptions available at any time depends in part upon the degree to which these formulations have been examined in the light of data from remote and contrasting situations. There is clearly a continuing and beneficial interaction between our ideas of the role of technology in modern society, and our understanding of the place of technology in any society. From a scientific point of view the important point about a situation is not whether it is remote, but whether it is relevant to theoretical issues. Even though the study of the remote leads to the discovery of no significant universal laws, it opens our mind to potential relationships which might otherwise elude attention. This is true of the study of contrasting contexts, whether near or far. No one who is familiar with the flood of new hypotheses introduced into modern social science by the study of the primitive and the deranged can doubt the stimulating effect of becoming acquainted with highly diverse social situations.

How shall we go about appraising the impact of technology upon the entire social process? One of the initial steps is to locate the technological factor in a generalized scheme of analysis. It is not essential in these days of semantic sophistication for scholars to use the same terms, or even the same detailed concepts. But it is vital that enough clarity should be communicated to permit free translation among frames of reference. Hence our task will be to outline a workable idea of the social process.

We think of the social process as man striving for values through institutions using resources. In this sentence each term is to be interpreted in a descriptive sense. Values, for example, are defined as categories of preferred events (like wealth, power, respect). In applying the value categories for descriptive purposes, it is always necessary to indicate whose values are postulated, whether those of the scientific observer or of the subjects observed. The term institutions designates the patterns through which values are shaped and shared. To phrase it another way, institutions are composed of practices, such as the methods of production or of conducing elections. Each practice, in turn, can be thought of as a pattern of perspectives and operations, the former referring to the ideas and sentiments involved, the latter to overt activities. In the sense of these definitions it is easy to identify technology as a social institution, and to recognize that in any given situation it is composed of an almost overwhelming number of detailed practices.

It is unnecessary to insist upon one exclusive definition of technology, since experience in social research and policy suggests that many definitions of key words can be useful, since many different purposes may be served. We may pause for a moment, however, to call attention to the existing range of definition. We may think of technology, for example, as the pattern of all the practices by which resources are utilized in the shaping of values. This has the merit of referring to engineering and applied science, for the most part, which are included in many popular and professional ideas of technology. However, technology is often used to designate more than "know-how". It may be employed to include resources which have already been processed for use, such as hydroelectric installations, machines along assembly lines, and networks of transportation or communication. We can think of the machinery of production as part of the culture materials of a society, and "know-how" as part of the material culture. In recent years, at least, the scope of the term technology is often extended to include the ways in which persons as well as *things* are manipulated. Because of the signal importance of personnel management, public relations, merchandising and advertising in the modern industry of free economies, these activities can often be classified for convenience as technology.

Suppose, however, that we return to the first definition, and consider technology as the practices by means of which resources are utilized in the shaping of values. Actually this is a much more comprehensive conception than the employment of engineering in the production of wealth, since resources are utilized for other values than wealth. The following is a convenient list of values and institutions that may be introduced for analytical purposes:[1]

[1] For more detail see H. D. Lasswell and A. Kaplan, *Power and Society; A Framework for Political Inquiry*, New Haven (1950); Lasswell, *The World Revolution of Our Time; A Framework for Basic Policy Research*, Stanford (1951); Myres S. McDougal and Gertrude C. K. Leighton, "The Rights of Man in the World Community: Constitutional Illusions versus Rational Action", *Law and Contemporary Problems* (Summer, 1949).

| *Value* | *Institution* |
|---|---|
| Power | Government |
| Wealth | Economic production |
| Respect | Social class distinctions |
| Well-being | Preventive medicine and therapy |
| Enlightenment | Mass communication; civic instruction |
| Skill | Occupations and professions |
| Rectitude | Morals; religion |
| Affection | Family, friendship |

Each category of value is intended to refer to distinctive culminating patterns of human relations, such as the making of key decisions (power) the production of goods and services (wealth), the giving and receiving of esteem or disesteem (respect), the fostering of bodily and psychic health (well-being), the acquisition or denial of opportunity to develop talent (skill), the favourable or unfavourable application of moral standards (rectitude), and the giving and receiving of intimate appreciation (affection).

Although these culminating patterns refer primarily to relations among people, they often involve claims and counter-claims to the control of resources. In some ways this is most obvious in reference to wealth, where all the facilities employed in production are owned or otherwise controlled. It is, however, no less applicable to power, as when weapons are used to influence decisions. When we think of well-being it is obvious that we refer to bodies as well as minds. The processes of enlightenment involve the vast technology of modern media of mass communication. In connection with every occupation and profession there is specialized equipment as well as "know-how". Respect differences are reflected in such tangible resource modifications as buildings and clothing. Rectitude values leave their imprint upon more than the skyline of medieval towns, or the prisons and correctional institutions of civilization. The structure of homes, in particular, reflects considerations of affection. In truth, technology ramifies through all the institutions in the social process of any culture or historical period.

## ASSESSING RESULTS IN HUMAN TERMS

In carrying through an assessment of the impact of technology we are especially concerned about what happens to the thoughts and feelings of human beings. In this sense we are more interested in the effects of technology upon perspectives than upon operations. All sorts of hypotheses, often contradictory, have been put forward concerning the significance of technology for sentiment and opinion.

Concerning power, for example: "The fact that men make machines increases man's sense of controlling his own destiny, and will to have a voice in what affects him"; "Technology centralizes choice in the minds of a few and undermines the degree of self-confidence among the people at large upon which democracy depends"; "Technology spells conflict, war and revolution"; "Technology lays the basis for planned evolution free of coercion".

Concerning wealth: "The machine heightens materialism by means of the spectacular achievements which are possible in producing material objects"; "The machine supplies man with slaves and promises to bring eventual freedom from work to all men".

Well-being: "Technology is capable of bringing an end to drudgery, accident, disease, and even old age"; "The mechanical rhythm of the machine puts an unbearable strain on the adaptive capacities of the human organism"; "Technology leaves in its wake a trail of disorganized personalities and of sufferers from new disorders of mind and body".

Respect: "The machine can do better what everyone save a few geniuses can do, and thereby renders most of mankind superfluous, impoverished of the dignity of making a significant contribution to history"; "Man vindicates his dignity by inventing the means of his own eventual emancipation from toil and want".

Enlightenment: "In an industrial society the instruments of communication distract and amuse or mislead the many for the benefit of the few"; "The communications revolution now puts in the hands of the community the means of public information on a scale adequate to the needs of a society of any size".

Rectitude: "The pace of technical change disrupts all standards of morality and substitutes nothing but calculations of expediency"; "The rise of technology spreads freedom of choice and enlarges the scope of human responsibility for his acts".

Skill: "Technology deprives man of skill, and degrades him into an obsolescing adjunct of machines"; "Technology releases the latent capacities of mankind on a greater scale than ever before dreamed of: the totally unskilled manual toiler is virtually extinct in advanced countries, and the hours of leisure provide opportunity for self-development for the millions".

Affection: "The impersonality of the machine denies humanity to man by making of him an interchangeable cog in an industrial leviathan"; "The machine liberates men for the full cultivation of congenial human relationships".

It is possible, of course, to re-analyse such hypotheses into more abstract elements, and to distinguish between statements which apply to short or long epochs of human history, or which are limited to a specific technology. These hypotheses can be re-cast to isolate such factors as rapidity of social change, or the rate of investment. In any case the essential scientific task is that of uncovering the concrete impact of technological evolution upon the inner lives of human beings.

## INTERVIEWERS, PARTICIPANTS, SPECTATORS, COLLECTORS

What are the most appropriate means by which these inquiries can be carried on? By this time the accumulating experience of social research has made this fairly clear. We hope to rely principally upon direct human contact, and this implies that we employ interviewers, participants, and spectators. For some purposes we must obtain data from collectors. Each alternative can be distinguished from the other according to the disturbances they are apt to create in the persons investigated, which produces distinctive errors of observation.

Undoubtedly the interview is the most versatile and direct aid to human understanding. This has been the chief reliance of the most valuable research that has been done upon the human consequences of modern industry, such as that of Elton Mayo and associates.[1] The distinguishing mark of the

[1] See especially R. J. Roethlisberger and W. J. Dickson, *Management and the Worker*, Cambridge, (1939), Ch. 13. For a survey of the methods of research on small groups consult Edward A. Shils in *Les "Sciences de la politique"*

interview relationship is that the subject is aware of the scientific aims of the research worker. When the subject is aware of the personality of the scientific investigator, but thinks of him as playing the role of an ordinary participant in the social situation, we have to do with the participant observer, not the interviewer.[1] Sometimes the observer disappears from the consciousness of the subject entirely, and merges with some feature of the situation in which the influence of the observer is of negligible importance. As a spectator, the scientist may stay in the grandstand at a hockey game, even though he continues to interest himself in noting the conduct of specific officials or players on the field.

The greatest stimulus to improving all the methods of direct field observation in modern times has come from the anthropologists. For a long time the *Notes and Queries* of the British anthropologists was the most practical guide for the on-the-spot student of folk culture. With the development of the functional approach in modern ethnology, the tool consciousness of the research worker has become much more acute. The essential emphasis of the functionalists was the interrelatedness of every detail of a given culture to its context of active use. Assume, for example, that the anthropologist discovers that a given folk culture possesses a creation myth. The functionalist is not satisfied until he has discovered all the ways in which the myth is intertwined in the life of the people. For instance, is the myth part of a body of secret lore transmitted from one group of leading figures to the next? Or, on the contrary, is the myth one of the bedtime tales for children? Does the creation myth provide part of the justification for the ruling class or caste? It is obvious that such questions cannot be answered apart from the most detailed information about a community. And this points to the problem of estimating the credibility of informants and the fullness of opportunity for seeing what goes on. One of the landmarks in methodological self-consciousness was Bronislaw Malinowski's brilliant and timely statement of the problems that arise in field work. His remarks reverberated far beyond the camp of the anthropologists.[2]

In passing it may be noted that in field work done in a modern civilization the contact between subject and observer need not be face-to-face. The interview can be by questionnaire at a distance. A participant observer may succeed in inducing individuals to prepare autobiographies, without revealing his scientific intentions. Acting as a spectator, the investigator may join the fans of a popular figure, and write letters to discover how the hero responds to his public.

The most conspicuous group of scholars who depend as a rule upon collecting rather than direct observation are the historians. Typically they gather material upon whose preparation they have no influence. Ordinarily they do not affect the contents of the autobiographies, diaries, letters, note books and account books which they gather in preparing the biography of a deceased personage. As in all human affairs, however, the differences fade at the margins and today historians often prepare the documentation upon which they intend to rely in the future. Some scholars now use recording machines (on tape, for

*aux États-Unis*, edited by Lasswell and Daniel Lerner, Paris (1951), and *The Policy Sciences; Recent Developments in Scope and Method*, Stanford (1951), Ch. 3. An earlier influential treatment is Walter Bingham and B. V. Moore, *How to Interview*, New York (1934) Rev. Ed.

[1] The term is used by Eduard C. Lindeman in *Social Discovery; An Approach to the Study of Functional Groups*, New York (1925).

Bronislaw Malinowski, *Sex and Repression in Savage Society*, New York (1925). From his starting point in anthropology W. Lloyd Warner developed his influential studies of social class. For example, Warner and J. O. Low, *The Social System of the Modern Factory*, New Haven (1947).

instance).[1] Thus the methods of social science penetrate every field of research having anything to do with human activity.

## INTENSIVE METHODS: PSYCHOANALYSIS

Among the procedures that have been evolved by modern students of human behaviour some are especially important. In this category must be mentioned the intensive method of interviewing which was originated by Sigmund Freud for psychiatric purposes. Although much research is being done to cut down the time involved, the orthodox method continues to require many hours of direct association between interviewer and subject. It is by no means unusual for the psychoanalytic series to continue for an hour a day over many months or years. At first the method was applied to the therapy of certain psychoneurotic disorders. In subsequent years, however, psychoanalysis has been applied to a formidable array of medical problems, and to the training of physicians and students. In the latter case training analyses may be undertaken by individuals who are essentially free of disease.

Why does psychoanalysis occupy a prominent place in our list of methods for studying the consequences of technology for human development? Primarily because of the depth and richness of the disclosure of human personality that occurs in a thorough analysis. Strictly speaking, psychoanalysis provides current data, in the sense that the words used and the gestures made occur in the present. It is true that many of the words and gestures refer to the past, often to the earliest episodes of life. It may appear somewhat pedantic to insist upon the imputed character of the interpretations which are made by the analytic observer about the past subject. Nevertheless, the separation is worth emphasizing, since modern research is focussed upon questions connected with the authenticity of these reconstructions.

In some parts of the world, notably the United States, the volume of interviewing currently done by psychoanalysts is large, and the range of cultures, social classes and occupations represented by the subjects is wide. In co-operation with the psychoanalysts themselves it is increasingly possible to formulate and to verify hypotheses about the interplay of various environments upon the formation of personality. I seems likely that by interviewing the interviewers it will be possible to accelerate the pace of our understanding of the interrelations with which this inquiry is concerned.[2]

A distinctive characteristic of psychoanalysis must be taken into consideration in interpreting the results obtained. The protracted interview series is expected to obtain beneficial results by improving the insight of the subject into the impulses and the distinctive mechanism of his own personality. Concerned at first with the structure of the impulse life (the *id*) modern psychoanalysis has put the emphasis upon the psychology of the defences which have been developed by the ego in coping with the basic impulses.[3] The methods of free association and interpretation utilized in psychoanalysis are expected to aid the subject in enlarging his area of accurate self-knowledge, especially by learning how to circumvent the automatic devices which he acquired in the past and which exclude some features of the self from full consciousness.

Hence the gains to research knowledge which occur in successful psycho-

[1] Professor Allen Nevins of Columbia University, for example, is active in such a project.

[2] On this technique see N. W. Ackerman and Marie Jahoda, *Anti-Semitism and Emotional Disorder*, New York (1950).

[3] Anna Freud, *The Ego and the Mechanisms of Defense*, New York (1946).

analysis are also accompanied by advance in insight; and there are grounds for the belief that, on balance, the fully analysed person is capable of a more realistic and beneficient form of leadership (or of any social participation) than before. In the discussion at the beginning of this paper we said that insight was the chief gain of the social (or policy) sciences. Psychoanalysis is doubly in point because to the gains of scientific reporting are added the individual insights that occur as data are obtained.

By this reference to psychoanalysis it should not be assumed that I am recommending that exclusive attention be given to the orthodox procedures. In the last few years many short cut methods including group interviews have been used.[1] It is important to take a permissive and scientific attitude toward all these developments, and to seek opportunities to discover the situations in which each method is especially likely to yield valuable results. Despite the legacy of controversy among the many schools of functional psychiatry it is important to abstain from partisanship, and to insist upon the open-minded investigation of every important modification in interviewing methods.

Moreover, modern developments have gone much further than in improving interviews. Therapeutic results have been reported as a result of asking patients to participate in dramatizations of human experience.[2] Strictly speaking, since these methods do not rely extensively upon insight, they may be less rewarding for our purposes than the interviews. But this is to be ascertained by investigation, and not assumed *a priori*.

Closely connected with the advances in psychoanalysis have been modern innovations in the field of psychological tests. These have long since passed beyond their early use as a means of ranking children according to the probability of good or bad performance in school examinations. The modern testing approach leaves no questions untouched, seeking to devise economical ways of making reliable predictions about all responses of groups and all varieties of personality.

Since tests do not necessarily improve the insight of the individual who takes them, test results have less interest for some purposes than depth interviews. But for large scale research operations where it is important to describe the distribution of a given trait or constellation of traits, modern testing procedures are indispensable, and are most effectively employed in close conjunction with such intensive methods as psychoanalysis.[3]

## THE DELIBERATE AVOIDING OF COERCION

I now come to a problem of policy in the proposed appraisal programme which is of basic importance to anyone who believes in the dignity of man. I refer to the temptation to apply the methods which have been devised by modern scientific research coercively.

The truth is that we are in the midst of a crisis in these matters which has

[1] See J. W. Klapman, *Group Psychotherapy: Theory and Practice* (1946).

[2] J. W. Moreno, *Psychodrama* (1946). Dr. Moreno is also widely known for his interviewing methods of describing the congeniality structure of groups. See his *Who Shall Survive? A New Approach to the Problem of Human Interrelations*, Washington, D. C. (1934).

[3] Among modern research teams who have used interviews and tests in close correlation the *Research on Prejudice* edited by Max Horkheimer and Samuel Flowerman is a good example. See espectally the volume on *The Authoritarian Personality* by Adorno, Frenkel-Brunswik, Levinson, and Sanford, New York (1950). An earlier example, also edited by Horkheimer, is *Studien über Autorität und Familie*, Paris (1936). For a study on a smaller scale, but with many important ideas, see David Riesman, *The Lonely Crowd*, New Haven (1950). Further, Elliott Jaques, *The Changing Culture of a Factory*, London (1951).

been of slow development. Modern science and engineering has put in our hands a means by which we can penetrate to the innermost secrets of another human being, irrespective of his willingness to co-operate. The most spectacular examples are narcosynthesis, the methods by which individuals can be brought to total self-disclosure under the influence of hypnosis and drugs.[1] When we consider the hours consumed in a prolonged series of psychoanalytic interviews, it cannot be denied that these methods are welcome short cuts, even when they provide the subject with no gain in insight.

The peril of which I speak is that these methods will be applied coercively. And when I speak of coercion, I include an atmosphere in which the individual is likely to lose his job, or some other object of desire, unless he voluntarily submits to the methods just referred to.

I recommend that whatever agencies sponsor and carry out studies designed to appraise the effect of technology shall deliberately abstain from the use of coercion, even of the subtle kind. I am not suggesting that we try to prevent the use of narcosynthesis, for example, but that we shall encourage only its non-coercive use, save when strong medical considerations indicate the contrary.

## THE CORRELATION OF PROCEDURES

In this discussion I have put the stress upon the methods developed by the social and psychological sciences for the direct assessment of the perspectives, conscious and unconscious, of human beings. A comprehensive programme of inquiry upon the effects of technology will not restrict itself to these procedures, but will plan to correlate all promising tools, whether old or new, direct or indirect, for the study of the contemporary and historical social process. Novel research methods are not restricted to those which can be applied in direct contact with human beings. For example, it is now feasible to describe changes in the meaning of symbols in the past by making content analyses studies of newspapers, periodicals and other media of communication.[2] It is important to neglect none of the conventional tools for studying the effect of technology, not only upon the perspectives of human beings, but upon other features of the social process.[3]

A complex effort of correlation is involved in organizing a current survey, and at the same time improving our knowledge of the past, and pre-testing alternatives of policy. The current survey must maintain a creative balance between methods of intensive research (like psychoanalysis) and more extensive procedures (like tests). Another correlation problem is to provide for concurrent studies employing both direct and indirect observation. Further, a comprehensive programme must strike a balance between describing the present and the past. Also, the plan needs to provide for some assignment of resources to the pre-testing of policy alternatives.

Finally, there is the responsibility for correlating a programme of research with the active dissemination of results on the widest possible scale to those

[1] The use of drugs for medical purposes was widely advertised after the war in such reports of war experience as Roy R. Grinker and J. P. Spiegel, *Men Under Stress*, Philadelphia (1945), Ch. 17. The use of drugs for political purposes has been widely reported.

[2] Leo Lowenthal established the existence of a trend to substitute heroes of consumption for heroes of production in "Biographies in Popular Magazines", *Radio Research*, 1942 1943, edited by Paul Lazarsfeld and Frank Stanton, New York (1944). See Lasswell, D. Lerner, I. Pool, *The Comparative Study of Symbols; An Introduction*, Stanford (1951).

[3] A galaxy of methods, new and old, is needed to verify many of the hypotheses put forward in such a book as *Technology and International Relations*, edited by W. F. Ogburn, Chicago (1949).

engaged at all levels in the making and execution of policy, whether official or private, central or local.

### CONCLUSION

Our position is that it is important to develop on a comprehensive scale institutions for self-observation which provide us with an appraisal of the current impact of technology, especially upon human values. Such agencies can apply and encourage the application of the observational procedures which have been developed in modern psychological and social research. The use of interviewers, participants, spectators and collectors are all indicated. Psychoanalysis is especially important for the depth of the perspective that it provides, and for the immediate contributions to insight that it makes possible. But psychoanalysis should be employed as part of a balanced programme that makes impartial comparisons of the usefulness of short cuts, and that relies upon testing techniques to diselose the frequency of significant traits or clusters of traits.

The aim is to provide, in addition to predictions of social conduct, the means of enlarging the freedom of choice to the end that practices which are in conflict with the basic values of human dignity shall be abandoned.

In executing this programme it is important to abstain from the coercive use of the methods by which individual privacy can be entirely abolished, such as narcosynthesis. If the study of the effects of technology upon mankind is to be carried out effectively, it must be carried on by methods which are not self-defeating of the values of human dignity which the results of the appraisal can be employed to serve.

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# PART II

# ORGANIZATION IN THE SOCIAL SCIENCES

# THE " FONDATION NATIONALE DES SCIENCES POLITIQUES "

27, rue Saint-Guillaume, Paris

The Fondation nationale des sciences politiques was set up under an Order dated 9 October 1945, which was one of the enactments relating to the reform of the public service and the teaching of the political and administrative sciences. It was designed to meet the desire to place the Ecole libre des sciences politiques, founded in 1872 by Emile Boutmy, on a new footing, while transferring its assets to a body which would be untrammelled by the officialdom of a governmental organization but would at the same time be administered in the general interest of the nation. Hence both (a) the Foundation's enjoyment of a status unusual in French law in that it remains a private body not subject to the strict rules governing public institutions, and (b) its national character as a body established by law and having a Governing Board of whose 28 members 12 only are representatives of the parent institution (i.e. the former School); the latter retain, however, the prerogative of appointing the Chairman, the first of whom was Mr. André Siegfried of the Académie française. This peculiar and extremely flexible status has in practice made it possible for the Foundation to preserve the best traditions of the former School and to develop a very great number of new activities within the general limits of the task committed to it by its Charter, i.e. "to promote the progress and propagation of the political, economic and social sciences". Mr. Jacques Chapsal, Director of the Foundation, is responsible for its smooth running; he is assisted by Mr. Jean Meynaud, Secretary-General. The Documentation Services are in the hands of Mr. Jean Meyriat.

## PREMISES AND ADMINISTRATION

The Fondation nationale des sciences politiques is responsible for the financial and general administration of the Institut d'études politiques of the University of Paris. More particularly, it provides the latter with the necessary premises and maintains the Library and Documentation Centre utilized by the instructors and students both of the Institut d'études politiques and of the Ecole nationale d'administration. The Foundation has extended and modernized its premises very considerably. It now has enough space both to provide adequately for its own activities and to be able to accommodate a number of national and even international associations, for whom this rearrangement offers great practical advantages.

## INSTRUCTION

The Institut d'études politiques, administered by the Foundation, is one of the Institutes of the University of Paris. Its purpose being to teach the political, economic and social sciences, its programme is very full and variable, far wider than the traditional teaching given by the Law Schools and Arts Schools in French Universities. The Institute more nearly resembles such bodies as the London School of Economics or the Social Science Schools in certain foreign countries. It offers at present 11 courses on general history and geography, 35 courses on contemporary States and international and colonial problems, 23 courses on political and administrative sciences, 12 courses on sociology and social questions and 33 courses on economics.

The full training requires three years, but those students already in possession of the *licence* need not take the first year. The instructors are drawn from the most varied sources; in addition to university personnel proper, the staff comprises officials, publicists, businessmen and technologists, who come to the Institute to describe the problems inherent in their particular professions. Besides formal lectures, an important place in the syllabus is given to work in syndicates, in which small groups of students are set a task of a practical nature, calling for personal initiative.

Lastly, there are seminars conducted by instructors in different branches of political science and economics, for students wishing to acquaint themselves with the methods and problems of individual research. Many of these students conclude their studies by the writing of a thesis, some of which have been good enough for publication.

Teaching in the Institute is divided into four branches: Public Service, where the essential object is to prepare students for the competitive entrance examination of the Ecole nationale d'administration; International Relations, primarily designed for those proposing to enter international organizations; and Economics and General, both opening the way to careers in private employment, business, journalism, etc.

## DOCUMENTATION

Ever since its establishment, the Foundation has tried to extend its activities in the sphere of documentation and has thereby been able to render services of more than local or even national importance.

### *Library*

The general library contains about 100,000 volumes. It is growing rapidly and a special effort is made to keep it up to date in foreign publications. As is the usual method in France, works are stored in stacks not accessible to the reader, who must indent for them on a request slip. However, there are card-index catalogues, both alphabetical and informative, available to readers, which enable them to find the reference and the work they need easily and rapidly. There are also available bibliographies, drawn up by the instructional staff, on all the subjects on which courses are given. The maps held by the library are listed in a special card index. Finally, a list of all new acquisitions is issued monthly; the list is distributed fairly widely and is regarded as a useful bibliographical instrument.

### *Special Rooms*

An International Relations Room was opened at the beginning of 1951, containing several thousand works on international relations and international law. The nucleus of the collection consists of the works held by the library of the Carnegie Foundation's European Centre, which were transferred to the Foundation at the end of 1950. The collection is kept up to date by the addition of new works on international relations acquired by the Foundation, the older or out-of-date works being withdrawn. Unlike the system used in the general library, the works in this room are arranged systematically on shelves to which readers have free access. Admission to this room is granted to all persons interested in the study of international relations, even if they are not members of the Foundation or the Institute.

At the date of writing—the beginning of 1952—a special collection of books and documents on the press is being built up. Details of these works and of the specialized periodicals are given in the general card indexes, besides which a special card index is kept up to date in the offices of the Institut français de presse.

### *Periodicals Department*

For some years past great attention has been paid to the collections of periodicals, more especially foreign. The Foundation is at present in regular receipt of more than a thousand newspapers and reviews, from all countries and in all languages. There is a special periodicals reading-room, supplied with the necessary catalogues, and further,

the latest issues of about 100 reviews are brought to the notice of readers by exhibition on a display stand.

All the periodicals received are regularly perused, and either the titles and particulars, or brief abstracts, of any articles of interest from the point of view of the social sciences are entered on cards. At the date of writing this means about 2,500 new cards per month, which are kept in a file available to readers, systematically arranged and with its own decimal index comprising about 14,000 items. The main divisions are by countries, with identical and fairly minute sub-division by subject within each. At present, the index contains about 80,000 entries of articles published in periodicals since 1946.

*Documentation Centre*

The work of this service is to maintain up-to-date files of press cuttings on all current political, economic and social problems. The service peruses, and cuts articles out of, some 30 daily and weekly newspapers, mainly in French and English, as well as a number of information bulletins, collections of documents, etc. Cuttings are arranged in files, classified in identically the same order and with the same decimal indexes as the cards for articles from periodicals. By this means, on any subject, the reader has merely to ascertain the numbers of the decimal classification relating to the various aspects of the subject, after which he can go straight to the required file or card-index section.

There is a special service in charge of Soviet periodicals. Cards of extracts from some 30 reviews in Russian are filed both in the general, and in a special card index. The latter also gives references to reviews abstracted by other Parisian organizations, more particularly the Paris Chamber of Commerce. Similarly, for all questions relating to the U.S.S.R., there is a series of files containing not only press cuttings and documents from various sources, but also typescript translations, in full or in the form of extracts, of important articles in Russian.

*Miscellaneous Activities*

The documentation services carry out bibliographical research and other work, as requisite, either for the Foundation's use or for other individuals or bodies. They also collaborate in a number of publications of a bibliographical or documentary nature; they have, for instance, afforded assistance on several occasions to the *International Social Sciences Bulletin*, and are regular contributors to *International Political Science Abstracts*, the *Bibliothèque internationale de la sociologie*, the *Bibliographie sélective des publications officielles françaises*, etc.

PUBLICATIONS

The Foundation itself issues a number of periodicals and scientific series, which form an appreciable percentage of the total French output in the social science sphere.

*Le bulletin analytique de documentation politique, économique et sociale contemporaine* appears every two months. It consists of a selection of the periodical cards rearranged for easy consultation with items on the same subject together, thereby facilitating research and throwing particular light on subjects currently most to the fore. The six *Bulletins* issued in 1951 quoted about 15,000 articles and a number of official documents issued by governments and international organizations.

The *Cahiers de la fondation nationale des sciences politiques* is a series of original papers on problems in the various social sciences. They have been appearing at irregular intervals since 1947; 10 issues were made in 1951, the latest being No. 30. Subject matter is divided about equally between economics, sociology and human geography on the one hand, and the political and administrative sciences, on the other.

The *Revue française de science politique* has been appearing since June 1951 and is published jointly by the Foundation and the Association française de science politique. This quarterly, while serving as the normal vehicle for all French-speaking political

scientists, gives proof of an international purview by devoting a considerable part of each number to contributions from abroad.

The *Cahiers du centre d'études de l'U.R.S.S.* of which three numbers have so far been issued, consist of original studies and documentary material translated into French.

In addition, the Foundation sponsors and assists in the management of several specialized series of books on the various social sciences, e.g. "*Collection d'études politiques, économiques et sociales*", published by the Librarie Dalloz (syntheses specially designed to meet the needs of higher education; three titles issued in 1951); the "*Sciences politiques*" series, published by the Librarie Armand Colin (five works so far published; major studies designed for social scientists and a slightly wider cultivated public).

To facilitate the publication of the best theses defended in Law Schools and Arts Schools, the Foundation has introduced an annual thesis prize, amounting at present to 50,000 francs.

### RESEARCH

Lack of sufficient resources has prevented the Foundation from recruiting the necessary scientific staff to undertake a variety of research on its own account. It has, however, been able to establish a Centre d'études de l'U.R.S.S., whose work has already borne fruit in the issue of the *Cahiers* mentioned above and is expanding. The Foundation also works for the formation of study-groups concentrating on specific regions of the world (Eastern Europe, Latin America, etc.). But, above all, it has followed a policy of promoting the social sciences, by creating a number of bodies for research in this field or by participating in the activities of already existing bodies with similar objects.

The main bodies concerned are the Association française de science politique, founded in 1949, which has already held a number of symposia and is at present conducting an international comparative enquiry into the structure of European socialist parties; the Centre d'études scientifiques de la politique intérieure, working under the aegis of the University of Paris and the Centre national de la recherche scientifique (it is shortly to publish a map illustrating the 1946 elections, to appear in an atlas showing the distribution of votes in all important general elections since 1948); the Centre de recherches administratives, which concerns itself specially with foreign administrative experiments and innovations, and arranges for the preparation of reports which are discussed at its study meetings. A number of documents drawn up by these two Centres have already been published, more particularly in the "*Cahiers de la fondation des sciences politiques*".

The Foundation also works in very close co-operation with other bodies which it has been able to accommodate on its premises, especially the Centre d'études économiques (which is included among the institutions in the Sixth Section of the École pratique des hautes études) and the Institut français de presse. Lastly, it participates in the work of a number of international social science associations and bodies.

## THE TWENTIETH CENTURY FUND

830 West 42nd Street, New York 18

The Twentieth Century Fund, of New York, has recently begun a study of the economic and social effects of technological change in the United States. The Fund is one of the leading independent foundations in the United States devoted to research and public education in the field of economics. It engages economists or social scientists to make studies of economic questions of public interest and importance, and to recommend policies based on its studies. Reports of the studies, when completed, are published and distributed by the Twentieth Century Fund.

The Directors of the study of the effects of technological change are W. Duane Evans, of the United States Department of Labor, and Irving H. Siegel, Political Economist, formerly of Johns Hopkins University. They have been at work only since May 1951 and are now in the stage of collecting the statistical and other material with which they will work in preparing their analysis.

The study has been undertaken with the following premises: (a) very rapid technological progress in the United States has been, in large part, the basis for the material prosperity of the country, creating the means for ever higher productivity and more efficient distribution of goods and services; (b) the course and pace of technological progress have also largely determined the form of American economic and social life; (c) the pace of technological progress in the United States will not decrease, but will increase in the foreseeable future; (d) an examination of the probable effects, over the next decade or so, of this accelerating progress will aid the American people and the rest of the world to understand, and perhaps in some measure to direct, their economic and social development.

A preliminary outline of the study, which is not complete or final, includes an opening section, "Technological Changes and Progress in the Past", which will describe briefly the most significant technical developments of the past century, and their important economic effects.

The second section, "Prospective Technological Developments", will constitute the heart of the survey. It will describe the technological developments which are imminent, that is, those that can be expected to find commercial application within the next decade or so. The probable social and economic effects of each of these will be assessed, including their effects on employment, present and future investment risks and needs, displacement of existing products and industries, adequacy of resource reserves and raw materials, problems of public planning, and so forth. Among the topics to be covered in this second section are: (a) Energy Materials and Power Generation; (b) Agriculture and Food Processing; (c) Housing and Construction; (d) Electronics, Controls and Communication; (e) Mechanical Labour-Saving Devices; (f) Metals and Alloys; (g) Chemical Processes and Materials; (h) Transportation.

A third section, "Probable Effects of Technological Changes", will attempt to summarize the economic effects, for the economy as a whole, of the prospective developments discussed in detail in Section Two: such matters as employment, working hours, productivity and the standard of living, capital needs, industry character and location, consumption habits, community and public policy.

In a fourth section, "Recommendations as to Public and Private Policy", a distinguished committee, appointed especially for the purpose, will make recommendations as to public and private policy, based on the findings of the study.

It is particularly important that such a study be made at this time, because there are many major technical advances that are now being, or soon will be, put to work on a large scale in the United States. A complete list of these cannot, of course, be given in this space, but a few typical ones are the following:

1. Television is already a very large consumer industry in the United States vitally affecting the entertainment field. It will increasingly and profoundly affect older industries such as radio and motion pictures, as well as education and communications in general.
2. The development of carbide as a cutting tool for machine tools trebles the speed at which machine tools work, with important results for productivity, employment, and the demand for machine tools.
3. Electronic devices for the performance of mental labour and electronic controls for new and improved automatic machinery open up tremendous vistas of higher productivity, with the completely automatic factory for some products as a probable development in the near future.
4. New and more economical methods for the conversion of natural gas and bituminous coal into gasolene and other petroleum derivatives, and for the extraction of petroleum products from oil shale, promise to change the whole picture of energy reserves in the United States.
5. Synthetic fibres will continue to grow in importance, introducing new materials

and many new products of improved or completely new characteristics, with major effects on the silk, cotton and wool industries.

The study is expected to take about one year, and when it is completed the report will be published by the Twentieth Century Fund in book form.

# THE COMMITTEE ON ECONOMIC GROWTH OF THE SOCIAL SCIENCE RESEARCH COUNCIL

Park Avenue, New York 17

The Committee on Economic Growth of the Social Science Research Council is engaged in exploring the feasibility of research on long-term changes in the magnitude and structure of nations or of their major regions. It has considered the practicability of research on the impact of capital imports in underdeveloped countries, regional aspects of economic growth within the United States, measurement of the rate and impact of major technological changes, and the role of the state in economic growth. Emphasis has been put on finding ways of encouraging more rigorous and more universally significant empirical and theoretical research, on the advancement of needed interdisciplinary study, and on the development of basic theory and criteria for quantitative measurement. The Committee hopes ultimately to produce a thorough critical review of the literature on the industrialisation of underdeveloped countries.

As part of its review of the present state of knowledge the Committee joined in sponsoring in the Spring of 1951 a conference on the quantitative description of technological change held at Princeton University. This brought together about 60 persons for an intensive discussion of the results—principally negative—of attempts at research on the measurement or orderly description of the initiation and application of changes in technology. In the Spring of 1952, the Committee is holding a second conference, this time on the problems in and obstacles to economic growth in Brazil, India and Japan. It has been designed as an experiment to test the feasibility of a comparative approach to the analysis of economic growth. While the scope of the specific papers prepared with respect to each of the countries will vary somewhat, it is planned that they will encompass generally (a) the record of past growth, with as much statistical documentation as possible; (b) social structure, particularly the position and power of social groups favouring or opposing industrialization; and (v) the state and its organization as a factor bearing upon capacity or incapacity for furthering economic growth. Efforts will be made during the actual sessions of the conference to determine to what extent uniformities can be identified with respect to trends in agriculture and industry, population and the labour force, social structure and the state, and entrepreneurial classes and forms of business organization.

In planning the conference the Committee has had the assistance of sub-committees on Brazil, India and Japan of which Charles Wagley of Columbia University, Morris E. Opler of Cornell University, and William W. Lockwood of Princeton University are the chairmen respectively. The members of the Committee on Economic Growth are Simon Kuznets of the University of Pennsylvania, Shepard B. Clough of Columbia University, Edgar M. Hoover of the Council of Economic Advisers, Wilbert E. Moore of Princeton University, Morris E. Opler of Cornell University, and Joseph J. Spengler of Duke University.

# RESEARCH CENTRE IN ECONOMIC DEVELOPMENT AND CULTURAL CHANGE[1]

1129 East 59th Street, Chicago, 37

The recent widespread interest in problems of economic development, particularly in the areas of the world now marked off as underdeveloped, has emphasized the necessity for examining further the relations between economic and cultural change. The present unorganized body of knowledge dealing with these problems seems to call for a deliberate effort at synthesis in order to arrive at general principles upon which policy and futher study can be based. The Research Centre in Economic Development and Cultural Change at the University of Chicago was established in an attempt to meet this need. Professor Bert F. Hoselitz is Director of the centre; Professor R. Richard Wohl is Co-ordinator of Research.

The useful work already accomplished by specialists working along traditional lines has not of itself produced the generalizations needed. The Centre, therefore, has gathered a staff of social scientists (trained in economics, sociology, anthropology and geography) who will work in concert in assessing what appear to be the most pressing unsettled issues in this field. This reflects the belief of the Centre that its problems cannot be confined within the limits of the conventional disciplines.

For its first two years of work, the Centre will concentrate on elaborating a series of hypotheses on the nature of economic change and its relations to the processes of cultural change and social structure in affected societies. Once the theoretical issues are clarified, it is hoped that new hypotheses will be forthcoming, the testing of which will require new and more purposefully motivated field work than is now possible and out of which more realistic policies might grow.

In order to maintain close ties with ongoing field research, working relationships with individuals active in several underdeveloped countries have already been established, and other such connexions are under consideration.

Furthermore, the Centre hopes to profit from advice and suggestions received through three established channels of communication with individuals and groups sharing like research interests:

1. *A Policy Committee.* A committee, composed of members of the University of Chicago faculty, has been established to assist in the formulation and implementation of the research programme: Bert F. Hoselitz (*Committee on International Relations*) Chairman; Robert I. Crane (*Department of History*); Fred Eggan (*Department of Anthropology*); Everett C. Hughes (*Department of Sociology*); D. Gale Johnson (*Department of Economics*); Harvey S. Perloff (*Programme of Education and Research in Planning*).
2. *Faculty Seminar.* A seminar has been established at the university to carry on regular discussions of the Centre's research and to which may be contributed the accumulated experience and knowledge of the university's faculties. This seminar will meet at regular intervals and will receive regular reports of work in hand at the Centre. Its discussions will be recorded, and statements of consensus will be circulated to the group. In the course of time, it is hoped to invite participants from outside the university community.
3. *Publications.* The centre will issue occasional papers and monographs on special aspects of its work to encourage discussion and fruitful controversy over unsettled issues. These papers will be solicited from a variety of sources, including the University of Chicago. The centre will be interested chiefly in bringing to the notice of a select and interested public contributions which otherwise would be relatively inaccessible.

The centre will welcome suggestions from individuals or organizations already at work in this field.

[1] For other committees of the University of Chicago see Vol. III, No. 2, pp. 428 and 430.

# INTERDEPARTMENTAL SEMINAR ON TECHNOLOGICAL CHANGE AND SOCIAL ADJUSTMENT

3437 Wordlaid Avenue, Philadelphia

As part of the programme which is being sponsored by the new Behavioral Research Council of the University of Pennsylvania, this seminar is supported under Programme Five of the Ford Foundation. It is designed to provide advanced graduate training in the practical application of modern techniques of the social and psychological sciences.

The staff includes Dr. Thomas C. Cochran of the History Department, Dr. Dorothy S. Thomas of the Sociology Department, and Dr. Anthony F. C. Wallace, also of the Sociology Department, but with a background in anthropology. Liaison staff members include Robert L. Leopold, M.D., of the University's Department of Psychiatry, and Dr. Anthony N. B. Garvan of the American Civilization Department. At present, there are three students from anthropology, two students from history, one from American civilization, and five from sociology. This seminar is not intended so much to review the existing literature concerned with the problem of technological change and social adjustment, as to conduct a co-operative field study in a small urban community (population about 40,000 in 1950) near Philadelphia. The community was chosen so as to be of manageable size, relatively independent of Philadelphia, and within easy commuting distance.

During the first semester of 1951-1952 the study is developing at an exploratory and inventorial level, the aim being to determine what categories can be approached and in what order, to uncover existing historical sources, to collect and collate statistical records, to define universes from which samples will be drawn, to experiment with techniques, and to make a general historical, demographic, and cultural survey of the community. By the second semester the design for the study will be outlined and segments assigned to several research teams. From then on the teams will carry on research continuously and extensively. It is anticipated that dissertations will grow out of the work of the seminar.

At present data are being assembled concerning three major areas: the changing demographic structure of the community; the contemporary culture and social conditions of the community; and the economic history of the community. Plans are being made to extend the ethnographic survey, as far as data permit, to about the year 1890, and to acquire life-histories and psychological data from samples of residents. It is hoped eventually to make comparable studies of other urban populations in the Philadelphia area. Since the project is still in the exploratory and planning stage, a more extensive description of the seminar's activities would be out of place here. Four general aims might, however, be mentioned which denote ultimate goals rather than operational plans:

1. An analysis of the social and cultural trends which have been changing the behavioral environment of certain twentieth century Americans and thereby altering their personalities and modes of social adjustment.
2. To ascertain how and why these environmental elements have changed over time.
3. To analyse the interaction of various environmental and intrapersonal elements.
4. To appraise the effects of social change—as defined and analysed—for social guidance and social control.

# STUDIES IN CULTURE AND APPLIED SCIENCE

Cornell University, Ithaca, New York

A programme of studies in culture and applied science was organized by Cornell University in 1947-1948. The aims of the programme were: (a) to study the social and psychological processes of technological and scientific modernization in several contemporary non-industrialized cultures; (b) to experiment in the training of Americans and other nationals concerned with such modernization; and (c) to investigate the possibilities of collaboration between social scientists and technical or natural scientists in the application of their disciplines to these ends.

As a result of both the teaching and research aspects of this programme there developed an increasing conviction on the part of the entire staff of the serious need for more precise and controlled experimental action programmes to be conducted in the field on the basis of data and hypotheses derived from the observational studies made to date. During the Spring of 1951 a detailed programme for four field projects which would approach a clinical or experimental type of research was designed. A generous grant was provided by the Carnegie Corporation to carry out this programme through a five-year period in four specific communities located in Peru, the American South-West, India and Thailand. Work in the first two is already under way, while plans and arrangements for work in the last two are being developed.

In each of these areas it is proposed that a limited series of specific technological innovations be introduced by a selected field staff under carefully planned and controlled conditions. The experimental operations of introducing new techniques will be supervised by appropriate technical scientists who will be advised by social scientists whose task will include a continuing analysis and appraisal of the cultural results of the experiments and of the changing social and psychological situation in each community. Thus scientific technical personnel will suggest technological changes appropriate to the physical environment from a natural science point of view, while social scientists will determine the appropriateness of these techniques to the cultural environment.

The aim in each community is to discover in the people's reactions to the new techniques specific reasons for resistance to technological change and to identify those aspects of cultural behaviour which are relatively amenable to change, with or without symptoms of social psychological stress. The limited changes to be instituted would in each case be designed to produce universally approved results; specifically they will be in areas of culture in which change is already being sought by United Nations, American, national or local agencies. Both in process and in end results these projects should prove not only of theoretical value, but also of practical value to international or national missions which are seeking to develop or support systems of democratic organization, ideology, and morale.

The success of the individual projects will require rather complex, elaborate, and costly operations in the field to insure adequacy of observation and control in each experimental situation. Again, the success of the total programme considered as an interrelated whole will require a considerable apparatus at home to provide comparability of data and their availability for generalization.

During the past academic year a faculty and staff seminar met about twice a month in order to carry out a comparative analysis of six culturally different communities for which Cornell staff members had gathered field data. The seminar also sought to determine and make explicit the methodological problems involved in such a comparative study of the social and psychological results of technological change. Members of the seminar were: John Adair (Navaho), Charles Brant (Burma), Allan Holmberg (Peru), Kamol Janlekha (Thailand), Alexander Leighton (rural Nova Scotia and Navaho), Morris Opler (India), Rudra Singh (India) and Lauriston Sharp (Thailand). Professor Leighton served as chairman of this group; Robert Smith, a graduate student

who had done field work on technological changes in lumbering in Nova Scotia, acted as staff for the seminar.

On the basis of seminar reports and discussions Mr. Smith prepared a detailed study of one aspect of the whole process of technological change common to the six communities dealt with, the shift from local economic self-sufficiency to dependence on the larger society or nation. The problems involved in preparing this report were typical of the kind of problem encountered in the study of other aspects of technological change.

A draft for a report of book-length proportions was also prepared. This report will be inclusive rather than selective and will be concerned with the extent to which there are common economic, political and social psychological processes involved in adjustment and resistance to technological innovations and to what extent there are processes that are peculiar to each culture dealt with. During the coming year Professor Leighton expects to revise this draft and prepare either articles or a monograph for publication.

# OXFORD UNIVERSITY INSTITUTE OF COLONIAL STUDIES

10 Keble Road, Oxford

## FUNCTIONS AND POLICY

The institute aims at serving as a focal point within the university for research in the field of colonial studies by individual specialists, both members of the university and others.

In addition it co-operates in the preliminary one-year course of training for cadets selected for the Colonial Service and in refresher courses for colonial officials of five or more years' standing.

## ORGANIZATION

The institute is administered on behalf of the Committee for Colonial Studies of the university. It is financed partly from general university funds and partly from monies allocated to the university under the Colonial Development and Welfare Training Grant. Sir Reader Bullard, K. C. B., is the present director of the Institute.

## RESEARCH ARRANGEMENTS

One senior research officer, working independently on an investigation approved by the Committee. One junior research officer. Research in the history of the British Colonial Empire is under the general direction of Professor V. T. Harlow, Beit Professor of the History of the British Empire; in colonial economics under that of Professor S. H. Frankel, Professor of Colonial Economic Affairs; and in colonial administration under that of Mr. K. E. Robinson, Reader in Colonial Administration.

## PUBLICATIONS

Reprint series of articles in learned journals by persons connected with the institute. The re-issue of bibliographies on colonial problems originally published under the auspices of Nuffield College, Oxford, Colonial Research.

# INTERNATIONAL SOCIOLOGICAL ASSOCIATION

Joint Meeting of the Research Committee with the Programme Committee for the 1953 World Congress

Paris, 22 December 1951

*Committee Members*

Professors David Glass, London, *Chairman*; Louis Wirth, Chicago, President of the ISA; Pierre de Bie, Louvain; A. N. J. den Hollander, Amsterdam; Ch. Bettelheim, Paris; Arvid Brodersen, New York; J. C. Falardeau, Quebec; Franklin Frazier, Washington D. C. (also member of Unesco).

*Other Delegates*

Professors C. Chapin, Minneapolis; René Clemens, Liège; Dr. Max Ralis, Paris; Professors Arnold Rose, Minneapolis; J. J. Schokking, Cologne.

*Unesco Social Sciences Department*

Mrs. Alva Myrdal, Director; Mr. K. Szczerba-Likiernik; Mr. Leo Silberman.

THE STRATIFICATION-MOBILITY PROGRAMME

After the election of Professor Glass as Chairman of the meeting, the Assistant Executive Secretary reported as follows on the action taken by the Secretariat in implementation of the agreements reached at the First Working Conference held in Paris in June 1951:

1. The papers and proposals of the First Conference had been mimeographed (doc. ISA/SSM/Conf.1/1-8) and distributed to ISA contacts in 30 countries.
2. Information had been received from 15 countries on possible contributions of national surveys of existing materials, and cost estimates for comparative sample enquiries had been received from five countries.
3. Recommendations had been made to Unesco for the inclusion of stratification-mobility research in the programme of the Social Sciences Department, and negotiations had been initiated with the Rockefeller Foundation for financial support of the co-ordinating activities of the ISA and for grants-in-aid for the national undertakings.

After a lengthy discussion of the desirability and feasibility of cross-national sample enquiries into social origins, social mobility and occupational hierarchies such as proposed by Professor Glass in document ISA/SSM/Conf.1/7, a minimum interview schedule providing a common core of questions to be asked in each participating country was provisionally adopted (doc. ISA/SSM/Conf.2/1).

The following further action was taken:

1. It was proposed that the memorandum presenting this minimum schedule should provide the basis for applications for financial support for the programme from U.S.A. Foundations: one general application being made from the ISA for the defrayal of co-ordination and conference costs, and a number of separate applications being made for grants-in-aid of national sample enquiries.
2. It was also agreed that only a few reports on empirical research of this kind could be expected for the World Congress and that the proposed programme of comparative investigations should be envisaged as a major preoccupation of the ISA also for the subsequent three-year period 1953-56.
3. There was accordingly concensus that the stratification-mobility section of the World Congress should be made as flexible as possible and should be designed

to include discussions not only (a) of advance reports on the comparative sample enquiries, but also (b) of papers on theoretical, methodological and practical problems relating to such empirical research, and (c) of a series of national suveys of existing knowledge of various aspects of social stratification and social mobility, particularly (i) the impact of educational systems on social mobility, and (ii) the social origins of opinion-moulding and decision-making strata of the population such as teachers and higher civil servants.

4. To ensure an adequate number of such papers and surveys, it was proposed that the present participants in the ISA programme should take charge within their respective countries of the collection of such contributions as could be made available in time for the Congress.
5. It was finally decided to convene a Second Working Conference on Social Stratification and Social Mobility in Paris during the first half of September 1952. At this Conference (a) a full discussion would take place of the problems encountered in the implementation of the comparative sample enquiries proposed, and (b) a detailed review would be made of the contributions to be expected for the World Congress to be held in 1953, decisions would be taken on discussion procedures, and definite designations made of general rapporteurs.

# A MEETING OF THE STEERING COMMITTEE OF THE INTERNATIONAL POLITICAL SCIENCE ASSOCIATION

Cambridge, 6-10 April 1952

The Steering Committee of the International Political Science Association met at Cambridge, from 6 to 10 April last, during the round-table discussion on political science teaching, organized by the Association under the chairmanship of Professor William A. Robson (London School of Economics and Political Science). The following took part in the Steering Committee's work: Professors J. Barents (Netherlands), M. Bridel (Switzerland), D. W. Brogan (United Kingdom) and P. Odegard (United States of America), Doctors J. Goormaghtigh (Belgium), J. N. Khosla (India) and K. Szczerba-Likiernik, the last-named representing Unesco's Department of Social Sciences.

Apart from routine administrative and financial matters, which occupied a large part of its time, the Steering Committee considered a certain number of problems which readers of the *Bulletin* would perhaps be interested to know about.

## EXPANSION OF THE ASSOCIATION'S MEMBERSHIP

The Steering Committee learnt with great interest of the result of the Secretariat's efforts to increase the number of national associations that are collective members of the International Association. National associations regarded as representative of political science in their respective countries are accepted as collective members. The whole structure of the International Association depends upon its member associations. The Steering Committee admitted three new collective members, namely the associations of Italy, Japan and Yugoslavia, which brings the number of affiliated national associations up to 15. All regions of the world are now represented in the International Association. The secretariat has established contact with some national associations which are not yet affiliated to IPSA. In a certain number of countries, associations are on the way to establishment. It is probable that, by the end of this year, the Inter-

national Association will have some 20 national associations as collective members. It is worth mentioning that the majority of these associations have been set up since IPSA was founded. This progress undoubtedly shows that political science is developing throughout the world, and it is a hopeful sign for the future.

### INTERNATIONAL SOCIAL SCIENCE COUNCIL

During one of its meetings, attended also by Professor Gunnar Heckscher (Sweden), the Steering Committee devoted careful attention to the proposals of the experts, many of whom were political science professors, who met at Unesco House last December. The Steering Committee re-affirmed the Association's intention not to join any institution that was not solely concerned with the social sciences and organized for the express purpose of meeting social scientists' needs. The Steering Committee approved, in general, the wise and very moderate resolutions adopted by the social science experts at the December conference. It strongly emphasized the desirability of organizing the Council, initially, on a provisional basis that could be reviewed subsequently in the light of experience, and of giving the body as light a structure as possible (a maximum of 15 members to start with).

### THE HAGUE CONGRESS

The Steering Committee made a thorough study of the various questions involved by the next Congress at The Hague. After discussion, the Steering Committee took the following decisions:

The Congress (which is the second IPSA Congress, the first having taken place in September 1950 at Zürich) will be held, as planned, at The Hague (Netherlands) from 8 to 12 September next. There will take place at the same time the first meeting of the International Political Science Association's Council, which is responsible for appointing the Association's chief officers and laying down its policy for a three-year period. The scientific programme of the Congress will consist of discussions on the four following themes:

1. The role of ideologies in political change, the methods of their dissemination and the conditions of their acceptance. This theme will be discussed under the chairmanship of Professor Quincy Wright (University of Chicago). The Association hopes to draw up a catalogue of research in progress in this field and to receive papers for discussion at the meetings of the Congress.
2. Local self-government as a basis for democracy. Professor Marcel Bridel (University of Lausanne) (Vice-President of the Association) has been appointed to lead this discussion as Rapporteur. There will be a certain number of specialized round-tables, which will consider some model types of local government, their expansion throughout the various areas of the world, and their value as a means of training people for democracy.
3. The political role of women. The Rapporteur responsible for leading this discussion is Professor Maurice Duverger (University of Bordeaux). Professor Duverger has organized it under the two following headings: Forms of women's participation in political life; the various categories of women playing a part in political life. The International Political Science Association is endeavouring to obtain the largest possible number of documents and reports on this problem as it exists in the different countries of the world.
4. The teaching of political science. Professor W. A. Robson (London School of Economics and Political Science) will preside over a number of meetings dealing with problems raised by the teaching of political science.

Working papers on items 1, 2, and 3 have been prepared, to embody reference to the material contributed by the various countries. The discussion on item 4 will complete the enquiry on political science teaching which has been conducted by IPSA since the beginning of 1951, and will enable the conclusions drawn from the enquiry by the

Rapporteur (Professor Robson) to be compared with the personal views of the Congress members.

The Association's secretariat (27, rue Saint-Guillaume, Paris-7e) is ready to supply all those interested with additional information on the organization of the Congress, with the working papers mentioned above, and with a few copies, which are still available, of the full proceedings of the first Political Science Congress (Zurich, September 1950).

# PART III

# THE UNITED NATIONS, THEIR SPECIALIZED AGENCIES AND THE SOCIAL SCIENCES

# THE ACTIVITIES OF THE LEGAL DEPARTMENT OF THE UNITED NATIONS

IVAN S. KERNO

The United Nations, like any large organization, has legal problems which arise in the course of its daily operations. Those of the United Nations are particularly difficult and interesting because of the wide scope of its activitiel and the novelty of many of them. The Legal Department, one of the principas departments into which the Secretariat is divided, was created to assist in the solution of these problems.

The interest of the United Nations in legal matters is not confined to the legal aspects of the problems which arise in the course of its work. The Organization is devoted to upholding and developing international law. In particular, the General Assembly has the function, under Article 13 of the Charter, of initiating studies and making recommendations for the purpose of encouraging the progressive development of international law and its codification. The Assembly has created the International Law Commission to assist it in this regard. The Legal Department has the duty to contribute to the Assembly's and the Commission's work toward the accomplishment of these aims.

Before a detailed analysis of the functions of the Department is undertaken, it may be helpful to describe its personnel and general organization, in order to provide a background for the appreciation of its operation.

The Department consists of about 30 lawyers, together with the administrative and clerical staff necessary for their work, some 51 persons in all; this makes it the smallest of the main departments of the Secretariat. The lawyers come from nearly 20 different countries, so that the Department's daily life is a small-scale experiment in international co-operation. Each of the lawyers does his work in English or French, which are the two working languages of the Secretariat, and nearly all of them have some familiarity with the other working language.

Apart from the Office of the Assistant Secretary-General, which supervises the whole of the work and takes an active part in the most important portions of it, the Department consists of three divisions: the General Legal Division, the Division for the Development and Codification of International Law, and the Division of Immunities and Treaties. Thus two of the divisions are specialized according to subject-matter: one division for the progressive development and codification of international law, that is, the legal work undertaken in accordance with Article 13 of the Charter, and one for the treaty functions of the Secretary-General, together with questions of privileges and immunities of the Secretariat and of delegations. The third division, the General Legal Division, is not thus specialized, but handles all problems which do not come within the scope of the other two. It prepares the bulk of the legal opinions given by the Department, and also gives much assistance in drafting.

Members of the Department are not rigidly confined to the work of the

divisions to which they are attached, but may be temporarily shifted as the pressure of work dictates. With experience, however, it has been possible to estimate work-loads with a good deal of accuracy and to adjust the size of the divisions accordingly, so that it has not often been necessary to interfere with an efficient system for the division of labour.

The functions of the ordinary lawyer consist mainly of two types of services: advising clients on their legal problems and on the drafting of legal instruments, and representation before tribunals and in the technical aspects of negotiation. The Legal Department performs analogous services in the United Nations, and as these are among the most familiar and important of its functions it will be well to deal with them first.

## ADVISORY FUNCTIONS

Who are the clients of the Legal Department, and what services does it perform for them in the way of legal advice and drafting? First of all, there is the Secretary-General himself, who constantly encounters important legal problems in the course of the performance of his very broad functions, both political and administrative. On occasion the Secretary-General wishes a legal opinion to be prepared not only for his own use, but for submission to some organ whose discussions he believes will be facilitated by it. The rules of procedure of the General Assembly and the Security Council both provide that the Secretary-General, or his deputy acting on his behalf, may make either oral or written statements concerning any question under consideration, and when such statements relate to legal questions the Department assists in their preparation. Several legal memoranda on subjects of the highest importance have, for example, been put before the Security Council.

The great majority of the Department's opinions, however, are given, not so much to the Secretary-General in person, as to other branches of the Secretariat, both at Headquarters in New York and wherever a United Nations body is operating. Some of these opinions relate to far-reaching questions on which the Secretariat must make at least a preliminary decision, but most of them merely concern day-to-day administrative problems.

Much assistance is given to other departments of the Secretariat in legal drafting. The Secretary-General is empowered by various regulations adopted by the General Assembly to make administrative rules on a number of subjects. Further, the Secretary-General has been delegated by the Assembly a limited, but real, power of legislation. Headquarters regulations are ordinarily presented by the Secretary-General for the approval of the Assembly; but if in his opinion it is necessary to give them immediate effect, he may put them into force at once, and such regulations supersede inconsistent United States laws in the Headquarters District. The Legal Department drafts or assists in drafting these rules and regulations, and countless other types of legal documents.

Advisory and drafting services are often performed for other organs. The deliberative bodies of the United Nations frequently rely on the Secretariat for the preparation of extensive reports on subjects of a legal nature or which have legal aspects; for example, the General Assembly at its fourth session directed the Secretary-General to prepare a report on the majority required for the adoption by the Assembly of amendments to and parts of important proposals. Also, the Secretary-General is sometimes instructed to draw up preliminary drafts of conventions; important examples are the request of the Economic and Social Council for a draft convention on the crime of genocide,

and the Assembly's request for one or more preliminary draft conventions and proposals regarding an international criminal court. At a later stage in the elaboration of conventions, assistance is frequently called for in drafting final clauses, relating to such matters as entry into force, reservations and so forth. All such drafts are prepared by or in collaboration with the Legal Department.

Members of the Department attend meetings in which legal problems seem likely to arise and furnish opinions orally or in writing either to the body concerned as a whole or to its officers. The Department has drafted or assisted in drafting the rules of procedure of many organs of the United Nations, and is often consulted when questions arise concerning their interpretation. Another function performed by the Department is that of examining the credentials of delegates to determine whether they are in conformity with the requirements of the rules of procedure.

United Nations missions to distant areas are often provided with legal advisers from the Department, who deal with a very wide range of important and difficult problems.

Finally, the Department stands ready to advise and assist delegations to the United Nations. They not infrequently ask its assistance on questions relating to privileges and immunities, a subject of considerable complexity on which the Department has great experience. Also, help is given to delegations in the preparation of draft resolutions to be submitted to the deliberative organs.

Letters are frequently received from private individuals requesting legal advice on their personal problems. While the Department is always ready to give information to the public on the legal activities of the United Nations, it is fully occupied by its official duties, and it cannot give legal advice in private matters.

The advisory function of the Legal Department is, from the standpoint of the legal knowledge involved, one of the most difficult performed by any group of lawyers in the world. The ultimate source of the law governing actions of the United Nations is of course the Charter, but the Charter is an evolving constitutional instrument, implemented and interpreted by thousands of resolutions, decisions and precedents of all kinds. Moreover, it must be interpreted in the light of general international law, which is the subject of many of the Department's opinions. The United Nations is itself an international person and has acquired rights and obligations by means of agreements on the international plane, such as the Headquarters Agreement with the United States and the Convention on Privileges and Immunities. Further, the United Nations carries out at least some activities in the majority of the countries of the world, and familiarity with the legal systems of a number of them is necessary to solve the problems that arise. The Organization does not operate solely on the international level, but also it is an employer, a housekeeper, and a landowner. Thus the Legal Department is called upon to deal with a very wide range of problems, and its members may obtain an extraordinarily varied experience.

### FUNCTIONS OF LEGAL REPRESENTATION

The Legal Department does not appear in court very often, but its functions of this type constitute some of the most interesting of its activities. First and foremost must be mentioned its work in representing the Secretary-General in the written and oral proceedings before the International Court of Justice

in connexion with advisory opinions. The Court has so far rendered advisory opinions in six cases, all sent to it by the General Assembly; in all of them either an oral or a written statement has been submitted on behalf of the Secretary-General, and in most of them both oral and written statements. These statements are usually of a purely informative character, and aim at placing before the Court all the facts which it may find relevant to its decision. But, on occasion, when the interests of the Organization as a whole are involved to an important extent, or when one of the organs of the United Nations clearly has a definite view on the legal issue, the statements are argumentative, and seek to persuade the Court to reach a particular result. The main examples of this kind of statement were in the advisory proceedings concerning the International Status of South West Africa and those concerning Reparation for Injuries suffered in the service of the United Nations. In the latter case it seemed vital to establish that the United Nations had the capacity to bring international claims for injuries to its agents; and this was the result arrived at by the Court.

The Department also appears from time to time before less august tribunals, The United Nations has the capacity to sue and may consent to be sued in national courts, and it sometimes chooses these means to adjust its differences. The Department represents the United Nations when it is decided to plead in such a court.

The United Nations has its own Administrative Tribunal, which decides cases where it is alleged that the contracts of employment or terms of employment of staff members of the Secretariat have not been observed. The Legal Department is charged with the defence when cases are brought before this Tribunal.

The Department handles the legal aspects of claims brought by the United Nations, including claims against States, and also handles claims made against the United Nations. In this latter category, apart from the cases described in connexion with the Administrative Tribunal, are cases arising under a Staff Rule which sets up a system of compensation for death, injury or other disability attributable to service, and also the usual tort and contract claims which any large organization must deal with.

The Legal Department participates in the negotiation of agreements between the United Nations and governments or other international organizations. It also collaborates with the other branches of the Secretariat concerned in the negotiation and drafting of major contracts for services, buildings, supplies and equipment.

### RESEARCH FUNCTIONS

The General Assembly has considered at its last two sessions the question of ways and means for making the evidence of customary international law more readily available, and at its next session it will presumably decide whether it wishes the Legal Department to undertake a programme of publications directed to this end. Such a programme might involve an extensive amount of research, unconnected with the legal questions arising in the work of the Organization or with the subjects of discussion in its organs.

The Department has already undertaken a limited amount of pure research. It has, for example, taken over the preparation of the United Nations Reports of International Arbitral Awards, of which the second series, prepared by the Department, is now in the press. Work has been started on a study of the

preparatory work of the Charter, in the form of annotations on each Article.

Most of the research done, however, has had the purpose of serving as a background for the Department's opinions or for the discussions of organs of the United Nations. Very extensive work of this type has been carried out. An example is the Systematic Survey of Treaties for The Pacific Settlement of International Disputes, 1928-48, prepared at the request of the Interim Committee of the General Assembly. A considerable number of memoranda has been prepared to assist the International Law Commission; for example, at the direction of the General Assembly the Department prepared for the Commission's first session lengthy memoranda on international law in relation to the work of codification, on a draft declaration of the rights and duties of States, on the Nüremberg Charter and judgment, on ways and means of making the evidence of customary international law more readily available, and on international criminal jurisdiction. At present two extensive compilations of national laws relating to topics discussed by the Commission are being printed, one on contiguous zones in the high seas and the continental shelf, and the other on criminal jurisdiction abroad and on the high seas, and further volumes in this Legislative Series are in preparation.

### TREATY FUNCTIONS

Finally, there are what may be called the treaty functions of the Secretary-General, which are performed by the Legal Department. Article 102 of the Charter provides that every treaty or international agreement entered into by any Member of the United Nations after the Charter came into force shall as soon as possible be registered with the Secretariat and published by it. No party to any treaty which has not been thus registered may invoke it before any organ of the United Nations, so registration may have important legal consequences. Thousands of treaties and agreements have so far been registered, and the number per month has been constantly increasing.

In addition to registration, there is another analogous function called filing and recording, which applies to treaties which do not fall within the categories to which registration applies, for example because they were entered into before the Charter came into force. Several hundred treaties have so far been filed and recorded. Treaties which have been registered or filed and recorded are published in the "*United Nations Treaty Series*", which already runs to more than 75 volumes.

Apart from these activities, the Secretary-General serves as depositary for a large number of multilateral conventions. He receives signatures and instruments of ratification or accession, notifies the States concerned of their receipt, and performs whatever other functions are provided for in the particular convention involved. Most of the conventions concluded under the auspices of the United Nations have the Secretary-General as their depositary; in addition, he has taken over the functions of this type which were formerly performed by the Secretary-General of the League of Nations.

These activities concerning treaties may seem at first to be of a purely routine or ministerial nature, but occasionally they have presented some of the most delicate and complicated legal questions with which the Department has been confronted. The principal example is the difficulties which arose over reservations to the Genocide Convention. These reservations were objected to by other States parties to the Convention, and the issue was presented whether the reserving States were nonetheless parties. The legal result was from the

outset the subject of dispute between governments, and the case was ultimately submitted by the General Assembly to the International Court of Justice for an advisory opinion.

### MISCELLANEOUS FUNCTIONS

Apart from the general classes of activities which have been described, the Legal Department has various other functions. One is to keep in touch with a number of international and national non-governmental organizations which are active in the field of international law, and whose collaboration proves valuable to the Department in its work. Another function is the answering of questions asked by governments, organizations or individuals about the legal work of the United Nations or about the status of treaties and conventions. Finally, there is the task of maintaining liaison with the International Court of Justice and the transmittal of certain notifications which the Court's Statute requires to be made through the Secretary-General.

It will be seen that the activities of the Legal Department are extremely varied and complex, like those of the Secretariat and the United Nations as a whole. After six years the Department has behind it a large body of useful work, and it has in general successfully performed the functions that were expected of it. As time passes and further experience accumulates, the Department's efficiency should continue to increase. Its members are profoundly conscious of the importance of the two related aims they serve: the effective functioning of the United Nations, and the advance of international law.

# UNESCO AND THE SOCIAL CONSEQUENCES OF TECHNICAL CHANGE

## THE DEPARTMENT OF SOCIAL SCIENCES

### TENSIONS AND TECHNOLOGY

The work of the Unesco Tensions Project in the field of modern technology is now sufficiently advanced for an interim report to be made on activities in progress and in prospect. Since questions of international methodology are of particular interest to social scientists, some account of the way in which the work was planned will be given, followed by a brief description of the main studies now in course of publication.

#### *The Planning of the Work*

In April 1949 an Advisory Committee[1] was convened by the Social Sciences Department of Unesco to consider which of the technological questions coming within the sphere of

[1] For membership of this Advisory Committee see Appendix I.

education, science and culture might most usefully be dealt with by social science methods. This Committee indicated three main lines of action.

The first of these concerned the problem of general and technical education in relation to modern technology. Clearly, in a society where the whole way of life, particularly the way of earning a living, is in rapid process of change, education needs to be something quite different from that appropriate to a static society.

"Sons no longer follow the immemorial ways of their fathers, behind the plow or at the handicraft bench. The son of the peasant may become a textile worker, and his son a bank clerk or a school teacher."[1]

In the course of the next 50 years—the lifetime of the children now in the schools—modern technology is likely to spread and develop enormously throughout the world. This raises fundamental problems.

"What have the educational systems of the various countries done to meet the tensions raised by shifts from farm to factory to white collar occupations? We think it would be most valuable if Unesco could collect and analyse significant programmes in the schools and educational systems of Member States. How are the peoples of the world trying to deal with these vast changes in jobs and status?" (Report of the Advisory Committee.)

To study these problems an Expert Conference, drawn from panels of names provided by the Unesco National Commissions of 12 countries, together with specialists in social science and in occupational statistics, met in Unesco House, June-July 1950[2]. A report, *Education in a Technological Society*, has now been completed, based upon the findings of the Conference.

The second line of action advocated by the Advisory Committee dealt with the human factor in industry. Modern technology has brought untold benefits. But it has also left a train of destruction in its wake. Particularly has it destroyed the sense of community, the feeling of belonging, without which man is a rootless creature, harried by insecurity and torn by tensions of many kinds.

"The worker at his post—often including the foreman—finds many of his hours filled with a sense of discontent if not futility, damaging to his morale and a drag on production, no matter how efficient the machine. He is mostly unconscious of the reasons for such feelings, but they may result in antagonisms against his employer, against racial minorities, against other nations, against society as a whole, against any group or ideology to which chance or propaganda may direct his aggressive feelings. Hitler and Mussolini rode to power on this unrest."

". . . Only two things appear to have reduced tensions substantially: the labour union and the scientific method. The first has given the worker a chance to belong to something again, and helped him to feel strong and important. The latter is beginning, just beginning, to help the worker participate in the analysis and direction of his industrial activities . . ."

As a contribution towards the scientific work in progress on this question, Unesco, with the unstinted help of the International Committee of Scientific Management, made case studies of 12 industrial undertakings in six countries;[3] the undertakings being especially chosen by reason of the spirit of cohesion, the feeling of community, they had achieved. On the basis of the data so collected, together with previous studies made in this field (particularly in the United States), a study has now been completed entitled *Community and Technology: an international study of the sense of belonging in modern industry.*

The third and last line of action indicated by the Advisory Committee concerned the extension of modern technology to the non-mechanized peoples of the world. How this can be done with maximum benefit and least hurt is one of the major problems of the present age. The sudden transition from a primitive or quasiprimitive society to a technologically developed society is a highly dangerous one. It is far easier to transmit modern techniques than it is to transmit, or create, the values by which these techniques need to be governed. The old handicraft carried with it a way of life.

The Unesco Tensions Project and Modern Technology: Report of the Advisory Committee, April 1949.

[1] For membership of this Expert Conference see Annex II.

[2] Those participating in this enquiry were: Mr. R. Caussin (Belgium); Mr. Jean Milhaud and Mr. Louis Pehuet (France); Prof. Paolo Barbi and Prof. Aldo Ferrarotti (Italy); Prof. Sune Carlson (Sweden); Mr. J. A. Chapuis (Switzerland); Miss Patricia Elton Mayo; Mr. J. F. Scott and Mr. R. P. Lynton (United Kingdom).

The modern factory is liable to disrupt ways of life without providing anything satisfactory in their stead.

As a first contribution to this problem the Social Sciences Department of Unesco, working through the World Federation for Mental Health, has sponsored the preparation of a survey entitled *Cultural Patterns and Technical Change*. The survey itself was made under the direct supervision of Dr. Margaret Mead, aided by a strong committee of social scientists, and a team of trained anthropologists in the United States.

## TECHNOLOGY AND EDUCATION

The Expert Conference which dealt with the educational aspect of Tensions and Technology attained a remarkable homogeneity of view. From papers prepared by the experts in advance and from the discussions of the Conference itself four main points clearly emerged. There was a general consensus of opinion and experience that, in the present-day world, with very few exceptions:

1. The technical education at present given is wholly inadequate to future needs.
2. The general education given is lacking in the realistic, contemporary knowledge necessary for life in a technological society and inclines towards a bookish "know-about" rather than a practical "know-how".
3. The cultural content of technical education is inadequate.
4. Technical education (including apprenticeship and other forms of in-industry training) is liable to be too narrow in a world of rapid technological change.

The Conference set itself to propose ways and means of removing these difficulties; not by adapting man to the technological society but rather by considering how education can form the whole man—that is, the man who is capable of living in a technological society and of transforming it to meet the material and spiritual needs of the age.

As the best means of securing international action to this end the Conference advised that Unesco should adopt an International Recommendation under Article IV (4) of the Unesco Constitution, thereby bringing certain desirable principles and practices directly to the attention of Member States. As a purely advisory body the Conference did not attempt to set such a Recommendation in legal form, but confined itself to making specific suggestions as to what each Article of the Recommendation might usefully propose.

In the view of the Conference, Article I of the Recommendation should deal with the need for social foresight with regard to this question. It would lay down the general principle that, in order to judge how many and what kind of technical schools and institutes should be established, regular statistical estimates are needed of a country's requirements in trained personnel for the major types of work at all levels. These estimates should be local and regional as well as national in their scope. Moreover, as present education is not for the present but for the future needs of society, occupational trends should be continuously forecast as far forward as practicable.

Article II would then proceed to establish the complementary principle that appropriate measures should be taken to set up technical schools and institutes adequate to meet future needs for technically trained personnel. Specific proposals under this head were that:

1. Technical schools should be designed and equipped so as to be at least as attractive in layout and amenities as those intended for general education.
2. The staff of such schools should enjoy a status at least as favoured as those engaged in general education.
3. Every facility should be given to children and young persons attending general schools to switch to technical schools, and vice versa.
4. Access to institutions of higher learning should be as readily available from technical schools as from general schools.

Article III would turn to the question of the element of "know-how" in general education. The principle proposed is that practical instruction of a realistic and contemporary character, appropriate to life in a technological society, should form

an integral part of the curriculum. Specific points stressed by the Conference under this head included:

1. Encouragement of operations requiring teamwork, so that there should be education for working in groups as well as for work as an individual.
2. Provision for games, camping and other outdoor activities, preferably in teams.
3. Teaching aimed at training pupils to find things and do things for themselves.
4. The provision of workshops and other manipulative forms of learning, conceived not as unimportant accessories which can be dropped when the examination period approaches, but as an essential part of general education.

Under Article IV, the general principle proposed by the Conference was that cultural education should constitute an integral part of the instruction given in technical schools and institutes. Particular emphasis was laid upon:

1. The primary importance of teacher selection and training to ensure that pupils should be stimulated in the early stages to want to continue their education throughout life.
2. The need for instruction, carefully integrated with the practical work of the students, bearing upon (a) social and economic questions (such as the history of labour, the development of particular industries, civics, etc.); (b) adequate mastery of the native tongue (and, where appropriate, of other languages); (c) design and other means of providing an adequate basis for appreciation of the arts.
3. Provision for adult education and further education both in the technical and in the cultural fields.

In general, the Conference urged that teaching should aim at developing the personality of the student, together with such a spirit of enquiry and independence of thought as to stand him in good stead not only in his work but in his free-time activities as well.

Article V would take up the problem of making technical training sufficiently supple to meet the needs of a rapidly changing technology. The general principle put forward is that, where part time or whole time technical education is given within industry, instruction should be sufficiently broad to make the subsequent reorientation of young persons possible, should this prove necessary. Measures for securing this essential adaptability include:

1. The provision of part time day education, both general and technical, in schools designed for that purpose.
2. Training in skills common to a number of trades.
3. Co-operative arrangements within industry enabling the learner to broaden his knowledge by working in different types of undertakings.

Article VI would turn to the fundamentally important question of the technical and specialized education of girls and women. The principle laid down here was that of parity; the education given to girls and women should be of equal value with that given to boys and men. Such education would include not only technical instruction enabling girls and women to better their economic position but, in view of its immense importance in regard to social tensions, also education for home-making, motherhood and the care and upbringing of children.

Finally, in Article VII, the need would be emphasized for administrative machinery designed to secure modification of the educational system as the technological situation evolved. Emphasis was laid on two points in particular:

1. The establishment of local and national co-operation (a) between bodies providing various types of technical education; (b) between the various government authorities responsible for education and those responsible for labour and technological matters generally; (c) between the education authorities and industry itself, including both management and workers; (d) between the different schools, etc., and industry.
2. The setting up where appropriate of a Central Review Agency to take account of technological and occupational trends and their potential influences upon education.

The Recommendation would be preceded by a Preamble explaining the need for organized social foresight if education is to help to resolve the tensions inherent in a technological society; indicating the reasons for which such foresight is especially necessary at the present time; recognizing the wide difference in circumstances of the various countries; and drawing attention to the Recommendations of the International Labour Organisation in this and allied fields.

In sum, four broad lines of direction may be distinguished. First, that by its very nature education must plan for the future and the social sciences should be used to the utmost to facilitate this planning. Second, that man can only learn to master the machine by being technically competent to do so; and to be technically competent he must be trained. Third, that the gap between "liberal" education and education for work should as far as possible be closed, as no longer appropriate to the conditions of today, still less of tomorrow. Fourth and last, though not emphasized int he summary description of the proposed Recommendation, but implicit in the whole work of the Conference, the need for great flexibility of adaptation in a world where literacy in some countries is complete and in others may not greatly exceed 10 or 20 per cent of the population.

## COMMUNITY AND TECHNOLOGY

The Report on Community and Technology breaks totally different ground, but nevertheless bears upon essentially the same central question: how technology can best be enabled to render a balanced service to life, and not, as may easily come about, serve it in one direction while destroying it in another. The balanced service to be rendered in this particular case is between man's basic need for a higher material standard of living and man's basic need for fellowship.

Modern technology has proved itself exceedingly effective in producing commodities. By this means the standard of living has, in a number of countries, been doubled and re-doubled in the course of a few generations. But technology can be, and often has been, exceedingly disruptive of communities. The industrial agglomeration, the factory town, the slum, the dormitory suburb, are characteristic products of the technological age; areas where men and women are crowded in upon one another, but with no neighbourliness, no fellowship, no social cohesion. To an ever-increasing extent, men having the wisdom to learn from the past and look to the future are asking the question: How can modern industry not only produce commodities but build communities ? In *Community and Technology*, an attempts is made to answer at least part of this question.

Jerome F. Scott and R. P. Lynton, who have written this Report for Unesco, set out first of all to establish, with a wealth of data and example, how catastrophically communities can be disintegrated by technological advance. They then show, from the special case studies made for Unesco in six different European countries, the specific and detailed ways in which actual enterprises have, in some cases, been successful in maintaining a community already in existence and, in others, have been able to foster new communities where the previous social organization had been destroyed or had never existed. Going still further into detail, they make an almost clinical examination of these processes of community-maintaining and community-making in two factories where long and detailed study has been possible.

Working from the broad empirical basis thus set up, they then seek to establish what are the satisfactions in industry which, in practice, have been found to bring the feeling of fellowship, the sense of belonging. They further proceed to set out the social science tools and processes by which the necessary analyses and evaluations can be made, enabling these general conclusions to be appropriately applied to any particular undertaking.

From the above brief account it will be evident that this is no facile study, but a careful attempt to derive, from a large mass of data, principles and practices which may be of value both to the technician and to the social scientist. So far as is known, this is the first international essay of considerable scope to be made in this special field. The writers have carefully abstained from anything which would lend itself to sensationalism. They do not claim to have discovered any one best way by which a factory or a mine may be a community-maker in the society in which it is set down. They produce no nostrum by which a feeling of "togetherness" can be guaranteed. In short, they realise that they are making a beginning, not writing the conclusion. The following passage, every word of which has been carefully weighed and, in turn, requires to be

carefully weighed in order to be fully understood, sums up a large part of their findings, so far as that can be done in a few lines:

"The first group of organizations—those in disintegrating communities—seemed to have the following features in common:

"1. Absence of craft hierarchy and of a continuous process by which attitudes, customs and social skills are passed on.

"2. Inadequate contact between various levels of the organizations.

"3. Inadequate contact between the industrial organization and its social environments.

"4. Social sickness in the industrial organization and in its social environment.

"The second group of organizations—those which were efficient and healthy and either helped to maintain healthy communities (or to prevent their disintegration) or helped to create a sense of community in their social environment—these organizations seemed to share the following features:

"1. Autonomous and responsible groups throughout the organization.

"2. Spontaneous collaboration between groups.

"3. Integration of informal and formal procedures and structures.

"4. Close relationship between the industrial organization and its social environment.

"It is possible to go further and generalize from each of these sets of four observations: *In the first group of organizations there were not, in the second group there were, adequate routine opportunities for meaningful spontaneous, intimate human association at work*".

Notable also is the chain of reasoning by which an attempt is made to see how the work done in the microcosm of the factory may gradually be carried over to the macrocosm of a tensions-ridden world. On the title page of *Community and Technology* the authors have inscribed the well-known dictum of Elton Mayo: "If our social skills had advanced step by step with our technical skills, there would not have been another European war." Their concluding page reads as follows:

"It is possible, and perhaps profitable, in this final section, to visualize some of the results of the further development of social understanding in general, and of the operation of industrial organizations as social institutions in particular. The results are, of course, closely interwoven, and it is possible to do no more than focus attention now on one, now on another aspect of the web of human affairs. For instance:

"1. It would seem reasonable to expect that attention to the community factor in industry would result in many individuals finding the security and stability which they now lack; and that this change would greatly reduce neurotic and anti-social behaviour. Much psychosomatic illness is traceable to industrial situations.

"2. It would seem reasonable to expect responsibility to be increasingly diffused through an organization, community, region, nation, leading to more equal sharing of its burdens and satisfactions. The growing tendency of society to consist of a few at the centre with too much to do, and many at the periphery with no community satisfactions, might be revised.

"3. It would seem reasonable to expect that a balance and integration of social classes and economic interests would replace the cycle of domination of society by successive groups. There would still be conflicts of interests to be reconciled, as in any democracy, but they would be manageable.

"4. It would seem reasonable to expect the production of greater wealth through the proven effects of spontaneous cooperation. It is only in an integrated community that the various interests, e.g. trade unions and management, can co-operate around the fundamental principle that wealth is increased only through increased productivity, not strife.

"5. It would seem reasonable to expect our capacity to communicate with others to develop greatly, rendering it easier to adapt to changes of all sorts, since we should have roots in communities and daily practice of effective communication and adaptation. In this sense, responsible membership of a real community is training for living in the community of the world.

"6. It would seem reasonable to expect status systems to develop attuned to the needs of the times, in which regional and national leaders would be thrown up by really representative institutions. In this way, community could co-operate with community, region with region, national policies be evolved and continuously adapted

The problem of finding the best leaders can only be solved in community experience, not by the ballot box alone.

"7. It would seem reasonable to expect the growth of many spontaneous and autonomous arrangements between effective social institutions and between communities; and to expect that these would replace many uniform national policies which were born of the failures of institutions and communities and now hinder their growth.

"8. It would seem reasonable to expect that the recognition of natural communities would result also in the growth of spontaneous arrangements between institutions and communities in different countries, blurring frontiers, and entailing more significant international co-operation.

"Trends such as these could be expected to result from making work part of life, a reintegration of industry and community."

## CULTURAL PATTERNS AND TECHNICAL CHANGE

The survey made by Dr. Margaret Mead and her co-workers under this title, in the terms of its opening phrase "is directed toward the implications for the mental health of the peoples of the world, which are involved in purposive introduction of technical change". Starting from a description of "The International Setting of Technical Change", it adopts what might be termed a bi-focal approach. On the one hand it gives a series of pictures of specific cultures: Burma, Greece, the Tiv of Nigeria, the Palau islanders and the Spanish Americans of New Mexico, U.S.A. On the other, it offers a number of cross-cultural studies of aspects of technical change: Agriculture, Nutrition, Maternal and Child Care, Public Health, Industrialization, Fundamental Education. From this material it derives first of all "Specific Mental Health Implications of Technical Change" and finally "Principles Involved in Developing Mental Health during Technical Change".

The general principles arrived at from the material examined in the survey are expressed as follows:

1. The culture of each people is a living unity in the sense that a change in any one aspect will have repercussions in other aspects. This is true even in those cultures which, while in the process of very rapid change, are torn by conflicts and contradictions.
2. As each human individual embodies the culture through which he lives, discrepancies, inconsistencies, different rates of change of parts of culture will have their expression in the personality organization of the individuals who live within changing cultures.
3. An active concern for the mental health of the peoples of the world includes an active concern for the ways in which technological change is taking place. When the introduction of technological change is purposively initiated, or promoted by individuals or responsible bodies, such purposiveness involves responsibility for the effects, not only in improved living conditions, but also upon the total way of life of the people, for reintegration as well as a defence against disintegration.
4. As each culture is unique, and as each particular situation within which a change is occurring or is to be made, is unique, it is not possible to lay down prescriptions for what is to be done in any particular case. It is only possible so to identify and describe the process which occurs, that each particular individual or team charged with responsibility for planning, or executing, or adjusting to some type of change, may be able to act in terms of this process. For example, it is possible to point out that in any programme involving popular education in public health, the whole problem of language is a serious one—exact meanings must be explored, questions of adapting old words to new ideas, as opposed to coining new words, must be weighed, choice must be made among rival dialects, issues such as the use of a world language or the elevation of a local language to a level at which the literature of the world may be expected to be translated into it—all must be taken into consideration. But after such details have been pointed out, whether all the public health teaching in Sumatra is to be couched in the new national language of Indonesia, Bahasa Indonesia, an adaptation of Malay, would have to be worked

out in active co-operation with members of the Indonesian health and education services, with an immediate knowledge of the local conditions in Sumatra. There is no possible prescription, except this insistence upon taking into account the culture and the situation and the individual involved.

5. All changes should be introduced with the fullest possible consent and participation of those whose daily lives will be affected by the changes.
6. All change, even such apparently conspicuous modifications of the external environment as building a dam or a railroad, occurs through the mediation and for the benefit of living individuals, and it is with these living human beings, their aspirations and hopes, their historically given and environmentally limited capabilities, that this survey is concerned.

## CONCLUSION

These three studies, all bearing upon the same crucial point of how technology affects people, open up possibilities for future action. Some of these possibilities are already being pursued by Unesco. As previously noted, *Education in a Technological Society* may be made the first step towards a Unesco International Recommendation. The Unesco South Asia Conference, to be held towards the end of 1952 on the Human and Social Impact of Technological Change, will draw freely upon the conclusions to which these investigations have led. A field study now being made for Unesco by the International African Institute, designed to indicate how the introduction of technology affects communities in that Continent, should both profit from and contribute to these analyses of tensions and technology. At an expert meeting of social scientists held in 1951 on the desirability and feasibility of setting up International Institutes or Centres of the Social Sciences, the question placed first as suitable for an International Centre was that of the social implications of technological changes.

From the widespread interest manifested throughout the world in this whole field of Tensions and Technology, it would seem that a new attitude is developing towards the place of industry in modern life. A hundred years ago, Factory Acts were just beginning to protect the individual against the grosser abuses of the industrial system. These days there is a corresponding movement to safeguards society against certain noxious by-products of technology; and not to stop at safeguarding, but actively to equip society with the means and skills necessary to secure that the machine is positively used for man and not, as too often in the past, man for the machine. For this, it may well prove, a new type of social scientist will be required—an industrial sociologist as he might be called. He would need to combine two very wide fields of knowledge, of modern industry on the one hand, of sociology on the other. This, clearly, is to make heavy demands upon any one person, with only the normal span of life in which to learn and work. But there are few spheres in which a larger and more vital task waits to be done.

## APPENDIX I

The members of the Advisory Committee on Tensions and Technology were: Mr. Stuart Chase, Writer and Economist; Professor Georges Friedmann, Professor at the Conservatoire national des arts et métiers, Paris; M. Hugo de Haan, Secretary-General of the International Committee of Scientific Management, Geneva; Professor Louis M. Hacker, Professor of Economics, Columbia University; Dr. G. R. Hargreaves, Chief of Mental Health Section, World Health Organization, Geneva; Professor William D. Line, Professor of Psychology, University of Toronto; Professor Cecil A. Mace, Professor of Psychology, Birkbeck College London; Professor Elton Mayo, Writer and Investigator of Industrial Problems; Dr. Wou-Saofong, International Labour Office, Geneva; Mr. P. W. Martin, Social Sciences Department, Unesco; Dr. F. Malina, Natural Sciences Department, Unesco; Dr. Belehradek, Education Department, Unesco.

The members of the Expert Conference on Educational Systems and Modern Technology were: Mr. G. Bernasconi, Président de la Centrale d'éducation ouvrière, Berne; Professor V. W. Bladen, Director of the Institute of Industrial Relations, University of Toronto; Professor G. Boalt, Professor of Sociology, University of Stockholm; Mr. F. Bray, Senior government official in charge of the Technical Education Department, Ministry of Education, London; Mr. P. Cassan, Manpower Section, International Labour Office, Geneva; Mr. Colin Clark, Director, Bureau of Industry, Brisbane, Government Statistician of the Queensland Government, Brisbane; Mr. John Clark, Chief Education and Research Officer, New South Wales Department of Technical Education, Sydney; Mr. Dorfman, Economic and Social Council, United Nations, Lake Success; Dr. J. C. Ghosh, Director, Indian Institute of Technology, Ministry of Education, Calcutta; Dr. Ph. J. Idenburg, Director-General of Statistics, Netherlands Central Bureau of Statistics, The Hague; accompanied by Mr. J. de Bruijn, Head of the Department of Cultural Statistics; Professor Th. Jœk, Professor, Copenhagen; Dr. A. Kahler, Special Unesco consultant, graduate Faculty of Political and Social Science, New School for Social Research, New York; Mr. M. Filho Lourenco, Vice-President of the Brazilian Institute of Education, Science and Culture, Director of the National Department of Education, Rio de Janeiro; Mr. D. McGranahan, Economic and Social Council, United Nations, Lake Success; Professor W. Ogburn, Department of Sociology, University of Chicago; M. L. Ragey, Director, Conservatoire national des arts et métiers, Paris; Mr. Ferid Saner, Directeur d'enseignement technique et professionel, ministère de l'éducation, Ankara; Mr. A. Sauvy, Directeur, Institut national d'études démographiques, Ministère de la population, Paris; Mr. Vercleyen, Inspecteur général de l'enseignement technique, Ministère de l'instruction publique, Bruxelles; Mr. P. W. Martin, Social Sciences Department, Unesco; Mr. B. A. Liu, Head of Statistical Service, Unesco.

## THE DEPARTMENT OF CULTURAL ACTIVITIES

### SOCIAL CONSEQUENCES OF TECHNOLOGICAL PROGRESS

There can be no doubt that international intellectual co-operation, cultural exchanges between nations and the dissemination of culture, which are the principal aims of the Department of Cultural Activities, are all factors in social progress. Hence certain of the Department's studies and activities are related to the problem of the social consequences of technological progress.

First, in the sphere of thought and the comparison of ideas. The enquiry of 1949 into relations between civilizations led the experts consulted by Unesco to consider the problem of the preservation and survival of original civilizations in the face of the universal penetration of technological progress. The symposium organized in new Delhi in December 1951 on intellectual relations between West and East discussed the problem of "The concept of man and the philosophy of education", and naturally broached the question of the relationship between technological progress and spirituality in education. Several of the recommendations put forward by the thinkers who took part in the symposium relate to this problem.

In a more limited field, the Inter-American Indian Institute has set out to find a solution to the same problem, in undertaking the Mezquital Valley project in Mexico, with the assistance of Unesco and under the aegis of the International Council for Philosophy and Humanistic Studies. The aim of this project is to find practical ways of adapting an Indian population, left untouched by technological progress, to social conditions in the contemporary world, without thereby divorcing it from its traditional cultural values.

The Department of Cultural Activities also tries to recommend and promote the use of the most modern methods in the pursuit of its permanent aims—the preservation

and enhancement of the cultural heritage of mankind, and the dissemination of culture. To an increasing extent, scientific techniques are used in the preservation and restoration of monuments, works of art and scientific, historical or artistic collections, and in the display of masterpieces in museums for the enjoyment and instruction of the public. Similarly, libraries make use of films, microfilms and records. They have books carried, in special vans, to the most remote rural communities. The model public library set up by Unesco, in co-operation with the Indian Government, is based on these methods, as will be the library to be opened next year in one of the Latin American republics.

In its endeavours to encourage a taste for, and knowledge of, the arts, Unesco also enlists the help of modern technology. For instance, in the colour reproductions of paintings, of which the Department of Cultural Activities is preparing catalogues and disseminating copies through travelling exhibitions, the art films on masterpieces of painting and sculpture, and the recordings of contemporary music, of Eastern classical music and of folk music under the auspices of the International Music Council, the most improved reproduction processes are used. Broadcasts of our records of folk songs and transmissions of our colour reproductions reach an incalculable number of homes through radio and television.

Thus, in working to raise the average cultural level and to promote international artistic exchanges, both in the letter and the spirit of the Universal Declaration of Human Rights, Unesco makes use of every kind of technical advance, with the object of improving the standard of living of contemporary man.

## THE DEPARTMENT OF TECHNICAL ASSISTANCE

### THE EXPANDED PROGRAMME OF TECHNICAL ASSISTANCE FOR ECONOMIC DEVELOPMENT

The rapid technological evolution of the past centuries has, with unprecedented and increasing effectiveness, paved the way to the use of the world's resources for the benefit of its inhabitants. But the rate of progress in different geographical areas has been unequal.

The wide gap between the great wealth in a few countries and the grinding poverty in most of the others constitutes a basic source of economic and social instability in the world. The closing of this economic gap by accelerating development in the less advanced areas is thus imperative.

When the countries attending the General Assembly of the United Nations signed the Charter in San Francisco in 1945, they were aware that it was insufficient to create an organization which would attempt to maintain international peace and security without, at the same time, promoting the economic and social conditions of peace. They therefore pledged themselves to work for higher standards of living, full employment and general conditions of economic and social progress.

The United Nations and its Member States, as a practical solution to the problem, has formed a gigantic pool of human and material resources which is available to countries needing and specifically requesting help.

The contribution of twenty million dollars pledged by the Governments convened at the United Nations in June 1950 formed the necessary foundation for the Expanded Programme of Technical Assistance for economic development of under-developed countries through the United Nations and its Specialized Agencies. Unesco participates in this programme, providing specialist advice and expert training facilities to co-operating Member States in the fields of education and science.

In taking on its share in this Expanded Programme, Unesco has continued to be guided by the principle that only through concurrent progress in education, science and culture, can the development of a country be assured. As of today, Unesco has received 132 applications for technical assistance from 37 countries and, in response, 123 Unesco experts are already assisting the Governments of 24 countries in their plans for economic and social development. One hundred and forty five experts,

nationals of countries benefiting from the Unesco technical assistance scheme, are studying abroad in order to replace, on their return, the international experts provided by Unesco.

Most under-developed countries need assistance in every field of education from fundamental to higher and technical education, and they are devoting a large part of their national resources and making considerable efforts to build up and strengthen their educational systems. In most countries assistance is also needed for scientific research, as the most important technical aid in the science field. Inadequacies in the teaching of science and in teacher training in nearly all under-developed countries have also become increasingly apparent.

Some countries possess natural wealth of which they are unaware or which they are unable to use fully owing to lack of qualified personnel or of the necessary techniques and organization. On request under technical assistance, experts at the highest level are assisting countries to solve these problems.

Industry and agriculture depend on the findings of research in the basic and applied sciences, and economic development, which is bound up with technical development, cannot be lasting unless it is backed by scientific and technical research. The technical assistance plan is committed to assist countries to carry out their economic development plans and projects, using, as far as possible, local resources and initiative. Nor can the supply of science teachers to under-developed countries meet the demand. These countries are planning great social and economic changes which involve the readjustment of their educational institutions, particularly in teaching and training in the sciences, from the elementary to the highest level.

The United Nations and Specialized Agencies Expanded Programme of Technical Assistance which has been in full and successful operation for more than a year and a half is the largest international effort ever undertaken to promote economic progress in under-developed areas. With the support of national and international resources, the programme is rapidly gathering momentum in its work of spreading the technical knowledge and skills that have brought economic well-being to other nations. New techniques and methods are being introduced in administration, agriculture, health, industry, labour, education and science.

It is not to be expected that these reforms will produce immediate and fruitful results for the economic and social life of the people but, from the long-range point of view, the programme will have a profound effect. Economic progress should bring higher incomes, better standards of living, wider culture and increased opportunities.

The process will, of course, meet serious obstacles; the adaptation of new technologies in under-developed countries is particularly difficult and costly and there can be no economic progress without full co-operation.

Economic progress requires the co-operation of the people and of the Government which must provide an administration capable of spreading and teaching the new techniques. If widespread advances in technology are to be made a basic, minimum level of education and literacy must be achieved. To this end Unesco calls for a united effort and is contributing a large part of its resources.

# UNESCO WORKING PARTY ON THE LEGAL, SOCIOLOGICAL AND ADMINISTRATIVE PROBLEMS OF NEWLY INDEPENDENT STATES

Unesco House, 23-25 January 1952

The Working Party convened to make recommendations regarding the execution of Resolution 3.32 of Unesco's programme for 1952[1] met at Unesco House on 23, 24 and 25 January 1952.

The meeting was attended by the following:

*Experts*

France: Mr. Henri Bourdeau de Fontenay, Director of the National College of Administration, Paris.

India: Mr. B. P. Adarkar, Deputy Representative of India at the Sixth Session of the United Nations General Assembly.

Israel: Mr. Mordechai Kidron, Director of the International Organizations Division of the Israeli Ministry of Foreign Affairs, Adviser to the Israeli delegation at the Sixth Session of the United Nations General Assembly.

Philippines: Mrs. Paz P. Mendez, representing the Government of the Philippines.

United Kingdom: Mr. F. R. Cowell, Secretaty of the British National Commission for Unesco.

United States of America: H. E. Mr. Lewis Clark, member of the Council for Libya adviser to the United States' delegation at the Sixth Session of the United Nations General Assembly.

*United Nations and Specialized Agencies*

United Nations: Mr. Martin Hill, Director of Co-ordination for Specialized Agencies and Economic and Social Matters; Mr. T. Power, Office of the United Nations High Commissioner for Libya; Mr. G. Martinez Cabañas, Deputy Director-General, Technical Assistance Administration; Mrs. M. A. Arakie, Technical Assistance Administration.

International Labour Organization: Mrs. A. Jouhaux, head of the ILO office in Paris.

*Observers*

Mr. T. C. I. Ekanayake, Secretary of the Sinhalese National Commission for Unesco, Colombo; Mr. P. A. Schillings, Service Director, International Institute of Administrative Sciences, Brussels; Mr. J. N. Ray, Professor at the Faculty of Law, Nancy, International Political Science Association.

*Unesco Secretariat*

Dr. J. W. Taylor, Deputy Director-General; Mrs. A Myrdal, Director, Department of Social Sciences; Mr. G. de Lacharrière, Deputy Director, Department of Social Sciences; Dr. E. Franklin Frazier, Head of the Applied Social Sciences Division, Department of Social Sciences; Mrs. R. Rommel, Head of the Programme Division, Technical Assistance Service; Mr. I. Dandolo, Exchange of Persons Service; Mr. P. H. Coeytaux, Department of Social Sciences, secretary of the meeting.

[1] 3.32. "The Director-General is authorized to help and encourage States which have recently obtained independence in studying the legal, sociological and administrative problems of internal organization resulting from their participation in the system of co-operation of the United Nations and the Specialized Agencies."

*Unesco Adviser*

Professor A. Bertrand, Director of Research, National College of Administration, Paris.

### OPENING OF THE MEETING BY THE DEPUTY DIRECTOR-GENERAL

The Deputy Director-General, Dr. J. W. Taylor, welcomed those present and stressed how important it was, under present circumstances, to study ways of helping newly independant States to play a more active part in the work of the United Nations and its Specialized Agencies.

### ELECTION OF THE CHAIRMAN

Mrs. A. Myrdal was unanimously elected Chairman.

### ADOPTION OF THE AGENDA

The provisional Agenda prepared by the Secretariat was adopted without amendment. The most important items on it were the following:

4. Selection of the problems of internal organization coming within the scope of Resolution 3.32 of Unesco's programme for 1952.
5. Drawing up of a list of studies to be undertaken within the framework of Resolution 3.32.
6. Discussion and adoption of the work plan for carrying out Resolution 3.32.
7. Discussion and adoption of the questionnaire to be sent to Member States concerned.

### ITEM 4 OF THE AGENDA

Besides considering the scope of the proposed survey and the field which it should cover, the Working Party also discussed the most appropriate methods to be followed in order to meet the needs of the States concerned.

It was felt that, with the limited funds available, any survey attempting to cover all newly independent States[1] was bound to be superficial. It was further pointed out that such States, each of which had reached a different stage of political, legal, social and administrative development, had little in common; it would therefore be arbitrary to place them in the same category, simply because they had all recently gained their independence.

It was nevertheless realized that, whatever the form of government or administration in these States, they all had to examine the same documents sent to them by the United Nations and Specialized Agencies and were equally bound to take account of the recommendations and decisions adopted by the governing bodies of the various international organizations. By studying the different administrative procedures adopted in each of the States concerned, it might be possible to make constructive suggestions likely to hasten the improvements which most of them are planning or contemplating.

In this connexion, the Working Party expressed keen interest in the information contained in the pamphlet entitled "*National Administration and International Organization*", published jointly by Unesco and the International Institute of Administrative Sciences following an enquiry conducted in 14 of Unesco's Member States on ways in which they have solved, at the national level, problems of liaison and co-ordination with the United Nations and Specialized Agencies.

[1] In Asia, these States are: Burma (Union of), Cambodia, Ceylon, India, Indonesia, Korea, Laos, Pakistan, the Philippines and Viet-Nam; in the Middle East: Israel, Jordan (Hashemite Kingdom of), Lebanon and Syria; and in Africa: Libya.

ITEM 5 OF THE AGENDA

It was agreed that the main object of the survey should be to define the administrative practices and techniques of the States concerned, at the same time including a few legal and sociological questions bearing directly on the functioning of government bodies responsible for relations with international agencies.

The questions which it was decided to include in this survey are listed in detail in a later paragraph recounting the discussion of Item 7 of the Agenda.

ITEM 6 OF THE AGENDA

The Working Party recommended the adoption of the following work plan:

The final version of the questionnaire to be sent to States covered by the survey will be prepared in close co-operation with the United Nations, particularly with the help of the Technical Assistance Board, which will inform Unesco of any points on which it already has detailed information.

The questionnaire thus prepared will be despatched, before 1 March 1952, to each State concerned. If replies are to be of any value, States will have to be allowed three to five months in which to prepare them. This will make it possible for Unesco, should first replies from some States be incomplete, to ask them for additional information and obtain a second, more detailed answer.

Each State will be invited to explain which particular aspects of the problems listed in the questionnaire it has to face and how it has solved them, or tried to solve them.

States will also be asked to mention any other problems, not referred to in the questionnaire, which have arisen as a result of their entry into the international community, and the measures which they have taken to deal with them.

States will be requested to substantiate their replies by reference to definite examples.

Lastly, it will be suggested that States should indicate how, in their opinion, the United Nations and Specialized Agencies could best assist them in the fields concerned.

The Cairo and New Delhi Science Co-operation Offices will be informed of the date on which the questionnaire is despatched, and they will be asked to take the necessary steps to ensure that Governments send in their replies to the Secretariat by the beginning of July.

Experts will be appointed by Unesco to analyse the replies as they are received by the Secretariat.

It might be possible to complete a preliminary synthesis before the end of September 1952.

A Committee of Experts composed of a number of experts from the States concerned, representatives of the United Nations and Specialized Agencies, and observers from appropriate international non-governmental organizations, will be convened in October or November 1952. The Committee will study the results of the survey and, on the basis thereof, will prepare a plan of work for more thorough studies.

ITEM 7 OF THE AGENDA

The draft questionnaire presented by the Secretariat and prepared with the help of Professor Bertrand was discussed paragraph by paragraph.

It was decided:

(a) to make the first question the invitation to States concerned to mention problems of internal organization, not referred to in the questionnaire, resulting from their participation in the system of the United Nations and Specialized Agencies;

(b) to give in the questionnaire, for each State concerned, any data already possessed by Unesco, even if incomplete; that information would then merely have to be confirmed;

(c) that questions on Technical Assistance should deal only with administrative bodies, machinery or procedures for Technical Assistance existing in each country, and

that, in any case, such questions should be included only when the necessary information could not be supplied by the Technical Assistance Board;

(d) to add a question on procedures and machinery for the execution of resolutions adopted by international inter-governmental organizations, or recommendations made by missions of experts sent by such organizations at the request of the States concerned;

(e) to devote particular attention to procedures adopted by States in forming their permanent or special delegations to the United Nations and Specialized Agencies, in briefing them and delegating powers to them, and also to problems of liaison between the national administration and international organizations. In this connexion, the tripartite membership of delegations to the General Conference of the International Labour Organization should be taken into consideration;

(f) to insert a question on the role of parliamentary bodies concerned with foreign policy, and that of semi-administrative organizations, such as the National Commissions for Unesco;

(g) to consider problems of administrative liaison between governments and non-governmental organizations, and also, when relevant, government procedures for consultation with such organizations;

(h) to include also a question on the manner in which State contributions to international organizations are included in national budgets, whether under a single heading or entered against the expenditure of various ministries.

# PART IV

# REVIEW OF DOCUMENTS, PERIODICALS AND BOOKS

# DOCUMENTS AND PUBLICATIONS OF THE UNITED NATIONS AND THE SPECIALIZED AGENCIES

## I. UNITED NATIONS

*Introduction to the Annual Report of the Secretary-General on the Work of the Organization.* Sixth Session. 1 July 1950-30 June 1951. A/1844/Add. 1, New York, 1951. 7 pp.

During the past year, owing to the threat of World War the governments have been preoccupied with emergency measures. It is therefore wise to give careful consideration to the place of the UN and its charter in the struggle for peace.

In the light of the record of the past six years the Secretary-General reviews the concept of the UN as the institution for bringing about a world organization, as the essential and primary instrument through which the member-nations could develop adequate means for preventing unlawful international conduct and world wars. The Secretary-General examines the record of the UN in fields other than the prevention of war, including the work of the Specialized Agencies (ILO, Unesco, WHO, etc.), and concludes that the correctness of the UN approach has been confirmed by experience, and that the necessity for strong UN action with regard to social security and peaceful settlement still remains. After expressing his belief in the desirability of universal membership in the UN, the Secretary-General briefly examines other steps towards the strengthening of the work of the UN for peace—such, for instance, as Technical Assistance.

### GENERAL ASSEMBLY

*Report of the Collective Measurds Committee.* Sixth Session. A/1891. New York, 1951. 48 pp.

In the introduction, emphasis is placed on the need for collective security and an international sanction against war. A brief analysis follows of the "Uniting for Peace Resolution" adopted in November 1950, of the scope of the committee's work, of collective political, economic, financial and military measures, as well as the advance preparation by States and by the UN.

These different measures are examined at some length and their effect estimated. In its review of the application of collective measures, the committee has also been concerned with the machinery for their implementation, particularly the utilization of existing international bodies such as the UN and the Specialized Agencies, and non-governmental international bodies.

After analysing the principal problems which have arisen in the application of collective economic and financial measures, the Committee puts forward its principles concerning collective action in the economic and financial field and makes certain recommendations. The committee believes that its proposals provide a practical framework within which the UN could take action to deal with a breach of the peace or an act of aggression, and concludes that increasing difficulties of localizing conflict make the need for an effective system of collective security greater than ever before. However, a genuine and lasting peace depends also upon the observance of all the principles and purposes established in the charter of the UN, on respect for and observance of human rights and fundamental freedoms for all, and on the establishment and maintenance of conditions of economic and social well-being in all countries.

Annex I contains the text of resolution 377 A(V) adopted by the General Assembly on 3 November 1950, urging Member States to respect fully, and to intensify joint action in co-operation with the UN to develop and encourage universal respect for the observance of human rights and fundamental freedoms, and to intensify individual

and collective efforts to achieve conditions of economic stability and social progress, particularly through the development of underdeveloped countries.

Annex II contains a tabular summary of replies received up to 30 September 1951 from various governments regarding the various national armed forces available for service as UN units.

Annex III contains the text of a report by the Working Group on the nature and the general functions of the panel of military experts.

Annex IV gives an account of the situation in Korea.

*Development of a 20-year Programme for achieving Peace through the UN.* Progress Report by the Secretary-General. Sixth Session. A/1902. New York, 1951. 9 pp.

After examining developments in the security field, such as the inauguration of periodic meetings of the Security Council attended by foreign ministers, regulation of armaments and atomic control, the strengthening of the UN collective security system and the question of universality of membership in the UN, the report considers the question of technical assistance and economic development, and encouragement of broad-scale capital investment in underdeveloped countries.

A series of practical methods for achieving these aims will be submitted to the Council in the latter half of 1952. The International Bank for Reconstruction and Development has been requested to make a report on the possible creation of an international finance corporation for the promotion of productive development projects by free enterprise.

More vigorous utilization of the services of the Specialized Agencies is urged, particularly those of ILO and Unesco.

A brief examination is made of the work of the UN in the field of human rights; of its promotion, by peaceful means, of the advancement of dependent, colonial and semi-colonial peoples towards equality; and of the evolution of international law towards an eventually enforceable world law for a world society.

*Information on the implementation of Trusteeship Council and General Assembly Resolutions relating to Trust Territories.* Memorandum prepared by the Secretary-General. Sixth Session. A/1903. 9 Oct. 1951. 99 pp.

The memorandum examines the respective international and regional relations and the political, economic, social and educational advancement of Tanganyika under British, and Ruanda Urundi under Belgian, trusteeship. The recommendations of the Trusteeship Council and their implementation are considered.

The section on international and regional relations deals with intra-territorial organization and administration, and the provision of information to the peoples of the trust territories.

*Political advancement* includes an account of the work of the Constitutional Development Committee, of native political structure and administration, the electoral system and native participation in the organs of government, national consciousness and general advancement.

*Economic advancement* covers participation of natives in economic activities: development plans and land utilization. The questions of famine and of non-indigenous settlement also come up for examination; as well as secondary industries, taxation and economic statistics.

*Social advancement* deals with the problems of racial discrimination, freedom of the press, nutrition, wage rates, penal sanctions for breaches of labour contracts, migrant labour, child labour, corporal punishment. The medical and health services and the question of immigration are considered. The condition of recruited workers, the problem of nutrition and overpopulation are studied and an account is given of the social rehabilitation of prisoners. The question of vital statistics is discussed.

*Educational advancement.* There has been an increase in educational facilities. The educational development and expenditure on education, the training of native teachers and the provision of higher educational scholarships are passed under review; the question of discrimination is also raised.

*Elimination of Statelessness.* International Law Commission, Third Session. Note prepared by the Secretariat. A/CN.4/47. 31 May 1951. 4 pp.

The Secretary-General received replies from 17 governments concerning the problem of statelessness and submitted them to the Economic and Social Council. On 13 March 1951 the latter adopted a resolution requesting the Secretary-General to address another communication to governments inviting them to submit their observations *by 1 November 1951* and to include in their replies not only an analysis of legal and administrative texts and regulations, but also informations on the practical application of such laws and regulations. The resolution also asks the Secretary-General to transmit a consolidated report, on the basis of these replies, to the Council and to the International Law Commission; and decides to defer further discussion of this subject to the Fourteenth Session of the Economic and Social Council.

*Creation of an International Criminal Court.* Committee on International Criminal Jurisdiction. Memorandum followed by Annexes containing preliminary draft Statutes for the court submitted by the Secretary-General. A/AC.48/1, 2 July 1951. 115 pp.

The memorandum examines precedents for the punishment of certain crimes by international tribunals, and considers briefly the work of international organizations and of governments through treaties and conventions, proposals and drafts, as well as the work of non-governmental organizations.

The study is divided into three parts. Part One deals with the question: "By what means is the International Criminal Court to be established?" By resolution of a Court or by an international convention adopted either by the General Assembly or by a diplomatic conference held under UN auspices, or by a combination of both systems? Part Two deals with the Statute of the Court, its jurisdiction and functions, its character and composition, and its competence. It also considers the question of the law which would be applied by the new Court and the questions of procedure and appeals. Part Three deals with the expenses of the Court. As regards the manner of establishing the court, the advantages and disadvantages of each of the suggested methods are discussed. With regard to the expenses, the question arises of how the funds for the salary and allowances of judges are to be raised, what expenses the court would be likely to incur and who bear them, the UN or Member States?

Annex I contains the preliminary draft of a statute for an International Court established by General Assembly resolution.

Annex II contains the preliminary draft of a statute for an International Criminal Court established by an international convention. Annex III gives the preliminary draft for a Court established as an *ad hoc* tribunal of judges chosen from the members of the Court whenever cases have to be tried.

*Report of the International Law Commission covering the Work of its Third Session 16 May-27 July 1951.* Supplement No. 9. A/1858. New York 1951.

An introductory account of the organization of the Third Session, the agenda and matters for the consideration and information of the General Assembly, is followed by an examination of the question of reservations to multilateral conventions from the point of view of codification and from that of the progressive development of international law. The Commission's suggestions with regard to multilateral conventions are given.

The question of defining aggression having been referred by the General Assembly to the International Law Commission, the latter first considered its terms of reference. A definition of aggression and of offences against the peace and security of mankind is inserted in a draft code, the full text of which is given.

The Commission also revised its statute with a view to the clarification of some provisions and the introduction of greater flexibility of prescribed procedures.

At its Third Session the Commission's rapporteur presented a second report on the Law of Treaties containing a number of draft articles and comments.

A second report on various proposals coming under the régime of the high seas

was also examined, chapters of which deal with the Continental Shelf and various related subjects, such as conservation of the resources of the sea, sedentary fisheries, etc.

*Memorandum concerning the Establishment of an International Criminal Court.* Committee on International Criminal Jurisdiction. A/AC.48/3. 17 July 1951. 151 pp.

Memorandum, prepared by Prof. Vespasian V. Pella, president of the International Association for Penal Law, at the request of the Secretariat. Contains documentation of interest to the members of the Committee on International Criminal Jurisdiction in their work on the preparation of one or more preliminary draft conventions and on the formulation of proposals relating to the establishment and to the statute of an nternational criminal court.

The introductory section deals with the attempt, after World War I, to punish crimes against peace and war crimes by means of international criminal jurisdiction, reviews the system of the Treaty of Versailles, its terms, and critically appraises its failure to establish permanent international criminal jurisdiction.

The position, in 1920, in the League of Nations, the trend of opinion between the wars in favour of international criminal jurisdiction, the work of certain non-governmental international organizations such as the Inter-Parliamentary Union, the International Association for Penal Law and the International Law Association, are reviewed and resolutions and proposals outlined.

A brief account follows of the League of Nations' reconsideration of the question, the 1937 Convention for the Creation of an International Criminal Court and the position at the time of the second world war are described. Though the Convention could not be ratified during the war, the work continued and drafts were prepared by the London International Assembly and by the UN War Crimes Commission, concerning war crimes. The International Military Tribunals of Nürnberg and Tokyo were established, but it was considered that the principles of international law as embodied in the charters and judgments of these tribunals could not be given permanent validity without international criminal jurisdiction. The resolution of the UN General Assembly of 11 December 1946 confirmed the principles of international law as recognized in the charter and judgment of Nürnberg.

Various non-governmental international organizations made proposals, after the end of World War II, for the establishment of an international criminal court. The memorandum treats the question of such a court as it has been discussed in the UN up to now; discusses how the judicial authority should be established with regard to the realities of international life. A more detailed account is given of the proposed organization and procedure of the International Criminal Court, and the matters of appeals and the execution of sentences are considered. It is believed that the question of the jurisdiction of the court and other related matters should be dealt with in an international convention.

Appendix I contains the text of the preliminary draft statute of an International Criminal Court; and Appendix II the preliminary draft protocol relating to the Court.

*Ways and Means for making the Evidence of Customary International Law more readily available.* Report of the Secretary-General, Sixth Session. A/1934. 8 Nov. 1951. 21 pp.

The section of the report of the International Law Commission concerning the work of its Second Session, recommending ways and means for making UN publications and treaty texts more readily available and the preparation of new publications relating to international law, such as the Juridical Yearbook and the Legislative Series. Recommendations for the publication of digests of diplomatic correspondence and other material relating to international law, and comments made on these suggestions during the deliberations of the sixth committee.

The text of the memoranda on the subject from the Minister of Foreign Affairs of Israel is given in the Annex.

*Draft Declaration on Rights and Duties of States.* Sixth Session. Report of the Sixth Committee. A/1982. 29 Nov. 1951. 6 pp.

On 6 December 1949, the General Assembly adopted Resolution 375 (IV), by which it resolved, *inter alia*, to transmit the Draft Declaration of the Rights and Duties of States

prepared by the International Law Commission to all Member States, requesting them to furnish their comments and suggestions by 1 July 1950.

The replies received by 15 September 1950 were reproduced in documents A/1338 and A/1338/Add.1. During its discussions, the Committee had before it draft resolutions by the Ukrainian S.S.R. and Yugoslavia, an Egyptian amendment to the latter, a joint draft resolution by the Benelux countries and a French amendment thereto. After considering these draft resolutions and the amendments, the Committee recommends to the General Assembly to postpone consideration of the Draft Declaration on Rights and Duties of States until a sufficient number of States have transmitted their comments and suggestions, and as soon as a majority of Member States have done so to undertake its consideration. It also urges Member States to reply as soon as possible and requests the Secretary-General to publish the comments and suggestions made by them.

*Economic Development of Underdeveloped Countries*

*Enquiries into the Household Standards of Living in Less-developed Areas.* ST/SOA/1. New York, 6 July 1950. 191 pp.

A survey of the organization and the geographical and demographical aspects of field investigations of the income, expenditure, and food consumption of selected households in Africa, Asia, the Caribbean, Latin America and the Pacific during the period 1930 to 1950. This survey of the standard of living in the less-developed countries and territories was prepared by the UN Department of Social Affairs at the request of the Social Commission of the Economic and Social Council.

Intensive investigations were carried out of the living conditions of selected persons whose standards of living are considered to be representative of those prevailing among the territorial, social, economic or occupational population groups of which they are members. The survey takes into consideration one or more of three principal factors in living conditions — consumer income, expenditure and domestic food consumption, and gives quantitative data only. Source material is constituted by reports of enquiries carried out since 1930 in the areas concerned.

The first part deals with the number, habitats and differential characteristics of the households; reference is made to investigations of consumer income, expenditure and domestic food consumption carried out within the last 20 years in the less-developed countries and territories. The geographic and demographic applicability of the findings is considered and the dates of the investigations are given. The population groups to which the findings of horizontal investigations of selected consumers' living conditions apply; the differential nature of the subject-matter; and the periods to which the data given relate are next examined.

The Appendix to Part I gives a geographically classified list of households selected, with their differential characteristics.

The second part of the report surveys the subjects, scope and organization of the enquiries and describes some of the circumstances in which the enquiries into the living conditions of the 250,000 households listed in the inventory appended to Part I, were planned and conducted.

The Appendix to Part II describes the enquiries, classified geographically by country or territory and, within each geographical section, chronologically. Each description deals with *either* a single enquiry into the living conditions of a single group of households, *or* with a multiple enquiry into the living conditions of more than one group of households.

An index of persons and institutions is given at the end of Part II.

*Memorandum by the Secretary-General.* Sixth Session. A/1924. 18 Oct. 1951. 7 pp.

The relevant items on the provisional agenda of the Sixth Session of the General Assembly are: (a) The financing of economic development; (b) land reform and (c) technical assistance for the economic development of underdeveloped countries.

A brief account is given of the recommendations of the Economic and Social Council for submission to the General Assembly.

*Report of the Special Committee for the Examination of Information Supplied in Virtue of Article 73 of the Charter (2-27 October 1951).* Sixth Session. A/1836. Geneva, Nov. 1951. 47 pp.

The Committee's mandate is to summarize and analyse information transmitted on economic, social and educational conditions in the non-autonomous territories.

The first part of the document deals with the report of the special committee and its constitution and its agenda. The economic situation and development in the non-autonomous territories are briefly surveyed, as well as educational facilities. More particulars are requested about technical assistance granted by the UN and the Specialized Agencies to non-autonomous territories. The territories to which Chapter XI of the Charter applies, are to be specified, and there are to be summaries and analyses by the Secretary-General of available information. After touching upon questions of procedure and international co-operation with regard to the economic, social and educational situation, reference is made to future work of the Special Committee.

Annex I to this part gives the text of the agenda, and Annex II the resolutions submitted to the General Assembly.

The second part of the document deals with the report on the revision of the Standard Form, intended as a guide to the Member States in the preparation of information to be transmitted under Article 73 of the Charter. The information required for each territory and the order in which it is to be presented is outlined. The Annexes to this part give (I) a model statistical representation of data on agricultural production, forestry and fishing, and (II) a specimen outline for presentation of information on mining production. Annex III gives the same for industrial production, and similarly Annexes IV, V, VI, VII, VIII for migration of labour, criminal statistics, medical and sanitary services, education and cultural statistics.

The third part of the document deals with the economic situation and problems of economic development and with general considerations as to the necessary measures for the creation of conditions of stability and the well-being necessary for ensuring peaceful and friendly relations between nations. Development programmes are considered—it might often be useful to concentrate economic development programmes on regions where rapid and appreciable results may be achieved. The capital supplied by the governments of the home country should be largely devoted to the financing of undertakings not directly remunerative, so as to strengthen the basis of the territories' economy, or to the financing of pilot projects in order to determine the chances of success of new forms of economic development. Attention is also given to the problem of basic equipment. The chief needs are set forth. The economic development of the great majority of non-autonomous territories depends on the rational utilization of their natural resources, hence the need for improved husbandry. The need for agricultural credit, for co-operatives and for efficient marketing of agricultural products is stressed. Two of the main problems with regard to agriculture are the distribution of landed property and the modernization of cultivation methods. Here the Committee has its recommendations to make. Industrial development and mining policy are examined, and the need for research work. The two Annexes to this part of the report list the surveys prepared by the UN Secretariat and the FAO and ILO reports with regard to the economic situation and development; and the reports prepared by the UN Secretariat and by ILO on the social factors influencing economic development.

The fourth part of the report deals with the factors to be taken into account in deciding whether or not a territory is non-autonomous.

### *Human Rights*

*Draft International Covenant on Human Rights and Measures of Implementation.* Memorandum by the Secretary-General. Sixth Session. A/C.3/559. 5 Nov. 1951. 17 pp.

The question of implementing the draft International Covenant is reviewed as well as the reconsideration of the decision to include, in one Covenant, articles on economic, social and cultural rights and on civil and political rights. The background is given of the fifth and sixth sessions at which this question was raised, the various votes on the question are recorded and the arguments advanced are summarized.

The wording of the articles on economic, social and cultural rights was next considered.

The draft Covenant contains two parts dealing with implementation: the first relates to the organization and the functions of a Human Rights Committee, including the receipt and examination of petitions from organizations and individuals; the second relates to a system of periodic reports. These provisions were originally intended for the implementation of economic, social and cultural rights, just as the provisions concerning the Human Rights Committee were intended for the implementation of civil and personal rights.

The questions of the Preamble to the Covenant and of the final clauses, and of the federal and colonial clauses were also raised. The Commission has incorporated the text of the territorial application clause prepared by the General Assembly, but was not able to prepare a federal state article or to make recommendations, as requested by the General Assembly, owing to lack of time. Ecosoc, however, requested the Commission to prepare recommendations at its next session.

Lastly, a third committee adopted a resolution calling on Ecosoc to request the Commission on Human Rights to study ways and means of ensuring the right of peoples and nations to self-determination, and to prepare recommendations for consideration by the General Assembly at it Sixth Session. The Commission placed the question of the right of peoples to self-determination as item 4 of the Agenda of its Seventh Session.

*Status of Women*

*Constitution, Electoral Laws and other Legal Instruments relating to the Franchise of Women and their Eligibility to Public Office and Functions.* Memorandum by the Secretary-General. A/1911. 12 Oct. 1951. 6 pp.

New constitutions have been adopted in El Salvador and Haiti containing provisions relating to the political rights of women. The present document embodies the relevant provisions of the constitutions of those two countries, together with five tables listing: (1) the countries where there is equal and universal suffrage; (2) the countries where the women's vote is subject to certain qualifications; (3) the countries where women may vote in local elections; (4) the countries where women have no political rights; and (5) countries in which action has been taken since the signing of the UN Charter (1945) extending full or limited political rights to women.

*Refugees*

*Observation on Problems of Assistance.* Report of the UN High Commissioner for Refugees to the General Assembly. A/AC.36/4. 14 Nov. 1951. 8 pp.

Brief analysis of IRO's work and the residual problems left for solution by a more permanent organization.

The two main problems are: first, emergency relief for refugees in areas where political or economic conditions make it impossible for them to rely on public relief funds, or to engage in any economic activity which will permit them to support themselves; second, a long-term problem connected with the assimilation of refugees in certain areas. The emergency relief problem is most serious in the Far East, but also quite serious in Central Europe.

The solution to the economic problems of alien refugees in Central Europe and the Near East lies not in supplementary relief but in rehabilitation. There are three possible lines of action:

1. Establishment of a limited relief fund to provide for the basic needs of certain refugee groups whose condition will be desperate after the cessation of IRO emergency relief. The High Commissioner requests authorization by the General Assembly to undertake the necessary negotiations and appeals to raise voluntary contributions.
2. Long-term plans and methods for financing and implementing economic construction measures calculated to afford to residual groups in some areas possibilities of a normal livelihood. Accordingly, governments and appropriate Specialized Agencies should be urged to work out in close collaboration with the High Commissioner for Refugees all suitable plans towards that end.
3. Those States willing to make a further international effort to promote migration

should take the necessary measures to ensure that refugees will receive a fair share of any opportunities for migration for which assistance will be provided within the mandate of the High Commissioner for Refugees.

*Assistance to Palestine Refugees.* Report of the Director of the UN Relief and Work Agency for Palestine Refugees in the Near East. Sixth Session. A/1905. Paris 1951. 48 pp. Part I: Problem and Prospect. Part II: UN at Work.

Part I: A report on the work of UNRWAPRNE from 1 May 1950 (the date on which responsibility was taken over from the UN Relief for Palestine Refugees) to 30 June 1951 (the end of the first fiscal period envisaged by the General Assembly Resolution 302, at the Fourth Session).

The report first examines the problem presented by the Palestine refugees and the prospects for its solution. Present conditions, number of refugees, census of those entitled to relief and those not so entitled; where and how the refugees live; their morale are described. A works programme is examined, including a statement of the problem and an outline of the programme to meet it by such measures as public works, i.e. road-building, afforestation, etc. These measures are examined and the possible results estimated. The questions of provision of new homes and assistance to enable refugees to support themselves are studied, and emphasis is given to the necessity of re-integrating the refugees into the economic life of the Middle East, either by repatriation or by re-settlement. A fresh appraisal is made of needs and the conclusion is reached that the problem is basically connected with the economy of the area, and requires greater efforts on the part of the governments concerned.

Many lines of approach have been explored: placement of refugees, housing, agriculture, loans, the development of Jordan, etc. Despite extreme poverty there is great economic opportunity, since the Middle East is potentially one of the richest areas of the world (oil, large areas of cultivable land, etc.). The importance of technical assistance is fully recognized and its role becomes daily more obvious. Technical advice of high quality has been provided to governments by UNRWAPRNE specialists, seconded by WHO experts.

Part II of the report examines the UN at work: administration and organization of the Agency; the part played by the UN Specialized Agencies in the UNRWAPRNE programme: Unicef, WHO, Unesco. The question of health comes next under consideration: organization of health services, personnel, etc. Statistical information is given on the personnel available at HQ in Lebanon, Syria, Jordan, and in the Gaza strip. Another table shows the reduction in international personnel required to allow for replacement by local recruits, in accordance with the WHO Eastern Mediterranean Regional Committee's request in 1949. Further tables show the incidence of certain infectious diseases, by districts, for the 12-months' period 16 July 1950—15 July 1951, and attendance at clinics during the same period. An account is given of clinics available, of insect control, including malaria, and of environmental sanitation.

Finally, special programmes covering venereal disease control, trachoma control, maternal and child health, etc., are outlined. The position with regard to medical and sanitation supplies during the year under review was considered as quite satisfactory. The cost of the health programme is close to $2,000,000 per year.

A general account is given of social welfare, covering such questions as: distribution of Unicef milk, clothing and welfare supplies, supplementary feeding, recreational and other activities, training in artisan trades, etc. This involves the co-operation of 30 voluntary agencies.

Finally, an account is given of educational measures—the situation prior to the establishment of UNRWAPRNE, its educational programme and work illustrated with tables and charts, and an economic and statistical summary of UNRWAPRNE' operations. Tables cover such questions as: the number of refugees reported receiving rations, age distribution of refugees, value of relief goods received, contributions and expenditures with a breakdown of the latter, purchasing power of contributions, proportion of refugees to the host population, cost of works, number of refugees employed on UNRWAPRNE works, distribution of refugees by occupation, medical statistics, educational programme—carried out in conjunction with Unesco, etc.

A financial statement is given for the period 1 May 1950-30 June 1951.

GENERAL

*Basic Programme of the Economic and Social Council for 1952.* Note by the Secretary-General. E/2158. 10 Dec. 1951. Resumed Thirteenth Session. 11 pp.

The Council decided to hold a limited number of meetings before the end of 1951 for the purpose, *inter alia*, of working out a basic programme for 1952, with the assistance of the Secretary-General.

The Secretary-General's proposals are presented in the form of a draft provisional agenda for both the Fourteenth and Fifteenth Sessions, with annotations. Thirty-five items are listed.

The 43 proposals relating to the Fifteenth Session scheduled to commence at Headquarters on 1 July 1952 are formulated more tentatively than those for the Fourteenth Session.

It is estimated that the Fourteenth Session will last 5-6 weeks and the Fifteenth Session 6-7 weeks.

*Report of the Administrative Committee on Co-ordination.* E/2161. 13 Dec. 1951. 19 pp.

A progress report of the Twelfth Session held on the 29 and 30 October and of the Thirteenth Session held on the 11 December 1951 respectively, at the Palais des Nations, Geneva.

Members and observers attending are listed, and the machinery for the expanded programme of technical assistance is reviewed. The future organization of the Technical Assistance Board is considered at length, though no definite arrangements were put forward as regards the Board's management and direction. In view of the more extensive character of the assistance requested, there was increasing need for the screening of individual requests and projects and rejection of those not satisfying established standards.

After an analysis of the experience of the Technical Assistance Board and of problems confronting it, the proposed future arrangements are outlined: appointment of a full-time chairman, improved co-ordination in the field, and improved organization and conduct of business. It was hoped that this would allow the TAB to give effective central direction to the expanded programme and co-ordinate future activities of the participating organizations in one single integrated effort to further the economic development of underdeveloped countries, in accordance with UN's and Ecosoc's guiding principles. General organizational matters, such as co-operation with the UN Emergency Programmes for Korea and the Middle East, regional problems, and the matter of consultation with the Advisory Committee on Administrative and Budgetary Questions are considered, as well as such substantive matters as the UN Priority Programmes put forward at the Council's Thirteenth Session, and consultation on programmes at the planning and the execution stages.

Technical officers of the UN (including Unicef) and of the Specialized Agencies met in November 1951 to consult on the continuing needs of children and the development of a co-ordinated programme of international measures to assist governments in meeting such needs.

Progress in the development of a co-ordinated programme in the field of rehabilitation of the physically handicapped was reviewed, and the Committee noted that considerable progress had been made in this field in a relatively short time.

*Economic Questions*

*Land Reform. Defects in Agrarian Structure as Obstacles to Economic Development.* E/2003/Rev1, ST/ECA/11. 23 July 1951. 101 pp.

An analysis of the degree to which unsatisfactory forms of agrarian structure and systems of land tenure in the underdeveloped countries and territories impede economic development and thus depress the standard of living, especially of agricultural workers and tenants and of small and medium-sized farmers. The report, which has been

prepared by the UN in co-operation with FAO, makes recommendations to the General Assembly with a view to improving the conditions of agricultural populations. It is not an exhaustive survey, either of agrarian structures in all countries or of all aspects of the agrarian structure in any one country; rather it describes the main general features of agrarian structure in underdeveloped countries by means of examples, dealing with the size and lay-out of farms, the various conditions of tenancy, agricultural credit, settlement of legal title to land and to water rights, communal tenure, and the special problems presented by estates and plantations. A study is made of agrarian reforms affecting size of holdings and conditions of tenure.

The report also considers the relations between agrarian structure and economic development with reference to the tenure system and agricultural organization. The conclusion reached is that for many countries the agrarian structure and particular systems of land tenure prevent a rise in the standard of living of small farmers and agricultural labourers, and impede economic development.

Five tables show the proportion of world population engaged in agriculture; the productivity of the agricultural population by continents and for the world, pre-war and for 1947-48; for India; the percentage of families with different sizes of land holdings; distribution of land ownership in Egypt in 1947; and a classification of farm establishments in Brazil according to size.

Appendixes. I. The relation of population to land in Asian countries. II. In African countries. III. In Latin American countries.

*Full Employment*

*Analysis of Replies from Governments to Full Employment Questionnaire Covering the Period 1950-51, Submitted under Resolution 221 E (IX) and 290 (XI) of the Economic and Social Council.* Report by the Secretary-General. Thirteenth Session. E/2035. 27 June 1951. 41 pp.

*Part A.* The problems of unemployment and inflation in 1950 and 1951.

The replies to Section A received by the 31 May 1951 from the Governments of Austria, Belgium, Bulgaria, the Byelorussian Soviet Republic, Canada, Denmark, Egypt, Finland, France, India, Italy, Laos, New Zealand (including statements covering Territories and Trust Territories), Poland, Sweden, the United Kingdom, the Ukrainian S.S.R., the Union of South Africa, the U.S.S.R., the U.S.A. and territories and insular possessions (as for the U.K.), and Viet-Nam are analysed in this report.

The replies have been divided into three groups: (a) economically developed, predominantly private enterprise economies; (b) centrally planned Eastern European economies; and (c) economically underdeveloped economies (only four countries—Laos, Viet-Nam, India and Egypt replied). Owing to the scant number of replies received from underdeveloped countries and to their unrepresentative and fragmentary character, these replies have not been analysed in detail.

Three sections are devoted to: the analysis of the actions taken, with regard to full employment standards, and examination of trends and objectives in the economically developed free enterprise economies; a study of the employment situation and price developments in 1950 and the problem of inflation in 1951; and a discussion of economic trends and objectives of Eastern Europe.

Statistical tables give: a break-down of the Gross National Product in 1949 and 1950 at 1949 prices, as percentages of total GNP in 1949; indices of industrial production, employment and productivity in 1950; indices of the Gross National Product; and of employment and unemployment in 1950. Further tables show cost of living and wages in 1949 and 1950 by quarters (third quarter 1949 = 100), for Austria, Belgium, Canada, Denmark, Finland, France, Italy, New Zealand, South Africa, Sweden, United Kingdom and the U.S.A., as well as anticipated increases in government expenditure and the Gross National Product. A series of tables illustrate anti-inflationary measures introduced by the Governments of Belgium, Canada, Denmark, Finland, France, New Zealand, Sweden, United Kingdom and the U.S.A. in the second half of 1950 or early 1951, with added "country notes" giving further details of measures taken.

Two tables show changes in economic activity in the U.S.S.R. and Poland in 1950

(1949 = 100) and the Polish national economic plan for 1951 which calls for increasing the contribution of the socialized sectors from 70 per cent of the national income to 75 per cent during 1951.

*Social Questions*

*Analysis of Comments of Information Enterprises and National and International Professional Enterprises on Draft International Code of Ethics.* Note by the Secretary-General. E/CN.4/Sub.1/151. 23 July 1951. 51 pp.

This paper analyses comments and suggestions concerning the draft international code of ethics forwarded by information enterprises and national as well as international professional associations to which the draft code was transmitted in accordance with Ecosoc Resolution 306 E(XI).

The comments are surveyed from the point of view of the usefulness of an international code of ethics, with the emphasis placed on the role which the profession should play in developing the code. Reference is made to the calling of an international professional conference to prepare and accept a final draft, the implementation of the code, and individual articles in the code are commented upon.

Annexed are the replies received from information enterprises and national and international professional bodies and associations. A tabular comparison of the comments on individual articles is also given.

*Forced Labour. Index of Economic and Social Council Documents.* Prepared by the Secretariat. E/AC.36/2. 11 Sept. 1951. 4 pp.

This classified index of the basic documentation and official records of the debates of the Economic and Social Council on forced labour and measures for its abolition has been prepared by the Secretariat for the information of the ILO *Ad Hoc* Committee on Forced Labour.

The index lists documents submitted at the Council's Eigth, Ninth, Tenth, Eleventh and Twelfth Sessions and replies from governments.

Ad Hoc *Committee on Forced Labour.* First Session. E/AC.36/5, 4 Oct. 1951. 1 p.

This is a list of the documents issued by the ILO's Governing Body and International Organizations Committee on the discussions with the UN concerning a study of the question of forced labour. It includes the official records of the 109th, 110th, 111th, 112th, 113th, 114th and 115th Sessions of the Governing Body of the ILO.

*First Progress-Report of the* Ad Hoc *Committee on Forced Labour to the Economic and Social Council and to the Governing Body of the International Labour Organization.* E/2153. E/AC.36-10. 30 Oct. 1951. 18 pp.

The report deals in turn with the appointment and organization of its First Session, the agenda, and the terms of reference. The Committee's first task was to assemble legal texts and to ascertain existing laws and regulations regarding forced labour. It was also to prepare a questionnaire to be transmitted to the various governments.

Work methods were reviewed and the adoption of the first progress report of the Committee was moved.

The annex contains a draft resolution for the consideration of the Economic and Social Council: "The Economic and Social Council takes note of the first progress report of the *Ad Hoc* Committee on Forced Labour."

*Human Rights*

*Activities of Unesco in the Field of Prevention of Discrimination and Protection of Minorities.* E/CN.4/Sub.2/121/Add.1. 20 Sept. 1951. 8 pp.

This report describes the activities of Unesco in this field in 1950 and in the first part of 1951, and gives a summary of the decisions of the Unesco General Conference, Sixth Session, June-July 1951, on measures to be taken in 1952, providing in particular for studies on certain aspects of the problem of minorities. Unesco's activities relate

mainly to social sciences, education and information: publicizing the Universal Declaration of Human Rights by the methods at its disposal. Unesco's activities in the sphere of social sciences here take the form of: (a) propagation of scientific data on the concept of race, to dispel prejudice; (b) investigation of positive contributions to the solution of the problem of minorities; and (c) studies concerning the cultural assimilation of immigrants.

*The Principle of Non-Discrimination as Applied in the Convention Relating to the Status of Refugees.* Memorandum by the Secretary-General. E/CN.4/Sub.2/135. 28 Sept. 1951. 17 pp.

Contains information on the Convention relating to the status of refugees which was adopted and opened for signature by the UN Conference of Plenipotentiaries on the Status of Refugees and Stateless Persons held at Geneva 2 to 25 July 1951.

Questions raised were: should qualifications of the principle of non-discrimination be included in Article 3? Should discrimination be prohibited between refugees only or also between refugees and other persons? Should discrimination be prohibited within the territory of a contracting state, or also outside such territory?

*Report of the Fourth Session of the Sub-Commission on Prevention of Discrimination and Protection of Minorities to the Commission on Human Rights.* E/CN.4/641, E/CN.4/Sub.2/140. 25 Oct. 1951. 55 pp.

The minutes of this session of the Sub-Commission include: communications relating to the prevention of discrimination and protection of minorities; further consideration of the Draft Resolutions relating to a definition of minorities and to interim measures to be taken for the protection of minorities, prepared by the Sub-Commission at its third meeting; the report of the Committee on the classification of minorities; proposals relatin to the protection of minorities. Information received from Governments under Resolution 303 F (IX) of the Economic and Social Council is reviewed. The document then goes on to examine the question of prevention of discrimination: (a) in respect of political groups;(b) with regard to racial groups (there is a statement on racial problems prepared by Unesco, whose activities in the field of prevention of discrimination and protection of minorities are also reviewed); and (c) in general: i.e. consideration of other problems related to the prevention of discrimination.

The Rapporteur draws attention to the provisions of the Draft International Covenant on Human Rights relating to or affecting prevention of discrimination or protection of minorities, and to information concerning prevention of discrimination and protection of minorities to be included in the Yearbook on Human Rights. Ecosoc's decision to discontinue the Sub-Commission, and future work of the UN in the field of prevention of discrimination, etc., are reviewed.

Annex I contains the text of the draft resolutions submitted to the Commission on Human Rights for consideration and adoption. Annex II outlines the provisions proposed by the Sub-Commission for inclusion in the Draft International Covenant on Human Rights.

*Economic Regional Commissions*

*Proposed Secretariat Programme of Work and Priorities.* Note by the Executive Secretary. E/CN.11/321. 19 Nov. 1951. 59 pp.

This proposed forward programme of work and priorities of the ECAFE was submitted for consideration by the Commission and its subsidiary bodies.

The Executive Secretary has divided the proposed programme of work under six broad headings: flood control; industrial development; inland transport, research and statistics; technical assistance; and trade and finance. A priority differentiation between these broad subjects is not practicable, owing to the highly specialized and not easily transferable skills of the senior personnel of the Secretariat, and to the fact that the present staff strength in each division is the minimum required to deal with the work, and could not be reduced without fundamentally curtailing the Secretariat's activity.

Each broad group has been further sub-divided into three groups—Group I:

continuing projects of high priority; Group II: *ad hoc* projects of high priority; and Group III: other projects: those which in view of budget limitations will have to be deferred.

Six appendixes deal, respectively, with: (a) financial implications for 1953 of the proposed Programme of Work; (b) Council resolutions on co-ordination; (c) report of Council Co-ordination Committee; (d) Council resolutions on relations with and co-ordination of Specialized Agencies; (e) General Assembly resolutions on concentration of efforts and resources; and (f) Council recommendations on concentration of effort and resources, and criteria for priorities.

*Statistical Organization and Activities in Countries of Asia and the Far East.* Report by the Executive Secretary. E/CN.11/322 (E/CN.11/STAT/18 Rev.1). 20 Nov. 1951. 28 pp.

In connexion with Item 11 of the Provisional Agenda, consideration is given to the organization and work of Central Statistical Offices to be set up in Asian and Far Eastern countries; to legislation concerning statistical bureaux and the place they occupy in the administration, size of staff, budget allocation, functions, etc. The statistical work in other governmental departments and in non-governmental organizations is discussed. Reference is made to the problem of statistical training as part of technical assistance provided by the UN.

The appendix deals with the question of improvement in availability and the supply of current statistical data in ECAFE countries and Japan, 1950-51.

*Decisions of the Economic and Social Council Regarding the Future of the Commission.* Note by the Executive Secretary. E/N. 111/310. 29 Nov. 1951. 10 pp.

At its Thirteenth Session, the Economic and Social Council considered the report of ECAFE, whose role as a vital organ of Ecosoc was stressed by several delegations. There was a feeling that the work programme might be lightened and that greater concentration on fewer projects might produce even better results. Particular value was attached to ECAFE's growing co-operation with other regional commissions (particularly ECE), and with Specialized Agencies. The Council expressed the desire to see an intensification of co-operative programmes and accepted the Commission's recommendation regarding a greater flow of technical assistance to the ECAFE countries. There was unanimity as to granting additional funds requested by the Executive Secretary, and general approval of the principles contained in the second report of the *Ad Hoc* Committee on Organization and Operation. It was decided to retain the Commission while amending its terms of reference.

Appendix I gives the text of Resolution 382 (XIII) on the Annual Report of ECAFE adopted by the Thirteenth Session of Ecosoc, 11 September 1951. Appendix II gives the text of extracts from Resolution 414 (XIII) on the organization and operation of the Council and its Commissions, adopted by the Thirteenth Session of Ecosoc, 18, 19 and 20 September 1951.

## INTERNATIONAL COURT OF JUSTICE

*Yearbook 1950-51.* Leyden, 1951, 262 pp.

Published by the Registrar of the International Court of Justice, this Yearbook covers the period 15 July 1950-15 July 1951. It is divided into 10 chapters. Chapters I, II and III deal respectively with the composition, statute and jurisdiction of the International Court. Chapter V contains a summary of the Court's judgements, advisory opinions and orders; Chapter IX, a bibliography which continues those given in previous Yearbooks; and the last chapter, copies of the texts governing the Court's jurisdiction: provisions of the United Nations Charter, agreements between the United Nations and the Specialized Agencies, and instruments for the pacific settlement of disputes.

*Pleadings, Oral Arguments, Documents, Reservations to the Convention on the Prevention and Punishment of the Crime of Genocide.* Advisory opinion of 28 May 1951, Leyden, 514 pp.

The first part of this volume contains: a letter addressed by the Secretary-General of

the United Nations to the President of the Court, on 17 November 1950; a resolution adopted by the General Assembly at its 305th Plenary Meeting on 16 November 1950; a list of the documents transmitted by the Secretary-General of the United Nations with the request for an advisory opinion; the written statements of various governments and those of the Secretary-General of the United Nations and the International Labour Organisation. The second part contains a report of the hearings held from 10 to 14 April and on 28 May 1951, by the Court, which was asked to give a decision on the validity of the reservations which certain States had made when signing or depositing their instrument of ratification or adhesion to the Convention on the Prevention and Punishment of the Crime of Genocide. The annexes to this part of the document contain the oral statements of Mr. Ivan S. Kerno (representing the Secretary-General of the United Nations), Mr. Shabtai Rossen (representing the Government of Israel), Sir Hartley Shawcross and Mr. Fitzmaurice (representing the Government of the United Kingdom) and Mr. Charles Rousseau (representing the French Government). The third part contains copies of the other documents submitted to the Court, and the fourth part, copies of the correspondence on this matter.

## II. SPECIALIZED AGENCIES

### INTERNATIONAL LABOUR ORGANISATION

*Yearbook of Labour Statistics 1949-50.* Eleventh issue. (Population, employment, unemployment, hours of work, wages, price indices, family budgets, social security, industrial injuries, industrial disputes, migration.) ILO Geneva, 1951, XVIII + 431 pp. (20 Swiss frs.; $5).

Published in English, French and Spanish, the *Yearbook of Labour Statistics 1949-50* contains, for some 60 countries, annual series covering the years 1949 and 1950 and shorter series which do not go further than June 1950. The chapters on employment, hours of work and wages are illustrated with separate tables for the manufacturing industries, mining, construction and transport. At the head of each chapter is an introductory note indicating the characteristics of the different types of statistics and the reservations which must be made in respect of each type. The industrial classification adopted by the Economic and Social Council of the United Nations has been used in the Yearbook as far as possible; but, in certain cases, the original terminology has been respected so as to allow comparison between the various national statistics. As is shown by most of the introductory notes, the different methods used in the preparation of the statistics render it difficult to draw international comparisons. The Yearbook emphasizes that one of its main objects is to promote the international standardization of labour statistics.

*General Report of the Advisory Committee on Salaried Employees and Professional Workers* (Second Session, Geneva, 1952). I. Geneva, 1951.

The first chapter of this report gives, in the form of an introduction, information about previous bodies established between the two world wars and about the Advisory Committee on Salaried Employees and Professional Workers; it then deals with the establishment, structure, composition, terms of reference, activities and first session of this Committee. Another chapter describes the main problems which arise in connexion with professional workers. After a number of terminological definitions it gives information, taken from claims made by the leading international professional workers' organizations and relating to statistics concerning salaried employees and professional workers, contracts of work, unemployment, professional training, conditions of work, paid holidays and social security. The third and last chapter ("Future Action") includes a certain number of recommendations, the most important of which concern hygienic conditions of work in commercial establishments and offices, and the problems raised by the status of technicians, officials, teachers and journalists.

*Recent Developments in the Field of Social Security.* Report I. International Social Security Association. Tenth General Assembly (Vienna, 3-7 July 1951). Geneva, 1951.

In its report on "Recent developments in the field of social security", the Ninth General Assembly of the International Social Security Association had shown the remarkable development of social security in the period following the second world war. Today the rate of this development has considerably slackened. As the present report points out, the efforts of recent years tend mainly to extend, complete and strengthen the existing system in the light of acquired experience. Among these efforts, particular mention must be made of those which aim at improving the system of loans so as to take into account the general tendency towards the higher cost of living, and of those aiming at a change in the administrative organization of social security. In its "international part", the report studies the bilateral and multilateral treaties concluded in 1949 and 1950 and the work done by international organizations. In its "national part", it describes, country by country, recent changes in the various systems of social security.

*First International Seminar on Social Security organized with the co-operation of the International Labour Office and the Italian Social Insurance Institutes.* Rome, 16-28 October 1950. Published by the Secretary-General of International Social Security Association. ILO, Geneva, December 1950. 251 pp.

This work contains summaries of the courses given at the First International Seminar on Social Security, held in Rome from 16 to 28 October 1950, under the auspices of the International Social Security Association. The first course, given by Mr. Maurice Stack, describes the foundations and the different forms of social security, and traces the progress of this institution up to the second world war. It emphasizes that, after the war, the Beveridge Plan encouraged the various countries to transform their system of social security, but that most of them preferred to develop existing institutions rather than adopt new legislation. The role of the International Labour Organisation is examined in the annex. The following article, which is devoted to social security in Italy, describes its economic aspects and examines the origin and evolution of Italian legislation in this field. Dr. Reinhold Melas then studies the psychological aspects of social security and more particularly the reactions of those benefiting by it, and maintains that social security should utilize the various media of propaganda in order to inform the population about the loans granted and popularize its work and methods. The course given by Mr. Nülo Mannio is devoted to the Scandinavian countries; it studies in turn the historical evolution of social security, the forms of insurance against the various kinds of risks, and family policies. This course points out that, in the countries in question, the social security system applies to the whole population, but that the State and municipalities make the largest contribution to its financing and administration. After examining the role played by the International Labour Organization and the International Social Security Association in the organizing of medical care, Dr. Laura Bodmer describes the situation in France, Chile, Great Britain and New Zealand. Mr. Ernst Kaiser makes a special study of centralization and decentralization of social security and, as an example, describes the system adopted by Switzerland, where centralization and decentralization are closely linked with the political structure. Course No. 7 deals with compensation for occupational diseases, which Dr. H. de Boër endeavours to define from the medical as well as from the legal point of view. Dr. de Boër, who gave the last course mentioned in this publication, also seeks to define the present problems of professional readaptation. In particular, he studies, from the point of view of vocational training and guidance, physical re-education and medical supervision, the readaptation of the disabled, the infirm, consumptives and those who have lost a limb.

## FOOD AND AGRICULTURAL ORGANIZATION

*The State of Food and Agriculture. Review and Outlook—1951.* Rome, 1951, IV+ 90 pp. ($1).

In this report, which reviews the world situation of food and agriculture in 1951 and appraises the outlook for the immediate future, FAO stresses the limited nature of the progress realized during the past five years. The production and consumption

of agricultural products are still insufficient, particularly in the neediest regions. The combined circumstances of world-war damage, gradually increasing populations, droughts, floods and all kinds of social disturbances have limited actual progress to much less than it had been hoped to achieve. After examining the agricultural situation of each of the main regions of the world, the report studies this situation with respect to each commodity, and shows that, although there is a gradual increase in agricultural output in general, the production of certain commodities such as cotton, coffee, rubber and sugar, still fails to meet an ever-increasing demand. Owing to this rate of progress, which is far too slow considering the immense needs which have to be satisfied, the outlook for food and agriculture is far from encouraging, particularly at a time when the expansion of world economic activity, stimulated by the policy of rearmament, is reflected in a large and growing demand for agricultural, forestry and fish commodities. Moreover, the use of certain raw materials and of considerable manpower by the armaments industries threatens to reduce the resources that are available for agricultural production. This situation might cause further rises in prices, the total or partial suppression of the benefits which increased production has brought to agricultural regions, and jeopardize the future expansion of agricultural production. The text is illustrated with graphs showing the movement of industrial production and of wholesale prices throughout the world.

## UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION

*Thirteenth International Conference on Public Education. Proceedings and Recommendations.* Unesco and International Bureau of Education. 1950. 148 pp.

Held at Geneva from 6 to 14 July 1950, the Thirteenth International Conference on Public Education, convened jointly by Unesco and the International Bureau of Education, had, like its predecessors, two aims: to permit the exchange of information between Member States and to promote the international study of a number of general educational problems which had been the subject of surveys by Unesco.

The first part of this booklet contains the reports of the competent ministries of the different Member States, concerning educational progress in 1949-50, as well as the discussions to which these reports gave rise.

The second part gives the text of three more specialized reports which were discussed in detail, and the recommendations based on them. The first report, concerning the international exchanges of teachers, stresses the importance of such exchanges for the development of international understanding. The second report, which recommends that handicrafts should be taught in secondary schools, emphasizes that such a step would counterbalance the extremely theoretical nature of this branch of education. The third report considers the introduction of mathematics in primary schools.

*Fourteenth International Conference on Public Education. Proceedings and Recommendations.* Unesco and the International Bureau of Education. 1951. 128 pp.

The first part of this booklet on the Fourteenth International Conference on Public Education contains a general study of school meals and clothing facilities, based on the answers of the various governments to a questionnaire. The information about school meals relates mainly to the administrative and financial organization of the service and the percentage of the school population benefiting by it. Particular attention is given to the question of free meals and their composition, and certain typical menus are given as examples and commented upon. With regard to the organization of the school clothing service, the pamphlet remarks that it is usually less advanced than that of the school meals service; it raises delicate problems of administration and finance.

The second part of the booklet describes the present situation of these school services in each of the member countries, with special reference to canteens (finance, percentage of the school population benefiting by them, composition of the meals distributed, etc.).

*Compulsory Education in Thailand*, by M. L. Manich Jumsai, "*Studies on Compulsory Education*". Unesco, Paris, 1951. 110 pp. ($ .75; 3/6; 175 frs.).

The author of this pamphlet on compulsory education in Thailand first points out that it was only when a system of State-controlled education was established in 1887 that the first serious efforts were made to develop education in that country. He then emphasizes the difficulties encountered when the system of free compulsory education established in 1921 was extended to the whole of the country.

Even today, although the number of pupils has considerably increased, school attendance is irregular, the number of illiterates is still large, and the teaching staff, school buildings and school material are not sufficient to ensure enforcement of the law. The situation will be even more difficult if effect is given to Unesco's recommendation to increase the period of compulsory school attendance by three years.

In order to remedy the disadvantages for organized education of governmental instability it is proposed, in particular, that the Parliament of Thailand should pass a law fixing the detailed organization so that it will be difficult for the Government to modify it. To reduce the delays of the central administration, it is also proposed to authorize provincial governors to take certain decisions in the field of education.

*World Communications. Press, Radio, Film, Television.* Division of Free-Flow of Information, Department of Mass Communication, Unesco. Unesco, Paris, October 1951, 233 pp. ($2.50; 13/6; 650 frs.).

This volume contains the basic information necessary for the development of the material means of information which will make it possible to achieve the "freedom of opinion and expression" defined by Article 19 of the Universal Declaration of Human Rights. The first part contains charts and graphs concerning, in particular, the circulation of the leading daily newspapers, the number of radio receiving sets, and cinema seating capacity. The second part, which is devoted to the communication facilities of the various countries, gives the number of inhabitants of each of these countries and contains a list of the journals and news agencies; particular mention is made of the circulation of each journal and its consumption of paper and the number of bureaux and correspondents of each news agency; a description is then given of the administrative and technical organization of broadcasting and the film industry. The text is illustrated with statistical tables relating to the population and its distribution, the news agencies, press, radio and cinema in each country. The annex contains a list of the most important news agencies and a bibliography.

*Professional Training of Film Technicians*, by Jean Lods. "*Press, Film and Radio in the World Today*". Series of studies published by Unesco. Unesco, Paris, 1951, 155 pp. (300 frs.; $1).

After the experts invited by Unesco to study the needs of certain countries in the fields of the press, cinema and radio had emphasized the inadequacy of existing facilities for professional training, Mr. Jean Lods, film director, co-founder and deputy director of the Institut des hautes études cinématographiques (Paris), was instructed to survey the situation of professional cinematograph training in the various countries. After a rapid historical account of the evolution of the technical and aesthetic progress of the cinema and its effects on the principle of professional training, the author, in Chapter IV, emphasizes the role played in some countries by special training institutes. The object of the last chapter is to define clearly the role of each of the technicians forming part of the production unit of a film, and, in this context, he deals at some length with the French unit. An extensive bibliography lists the principal books on cinema technique.

## INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

*Summary Proceedings.* Sixth Annual Meeting of the Board of Governors. Washington, D.C., September 10-14, 1951. November 1951. 51 pp.

The Sixth Annual Session of the Board of Governors of the International Bank for Reconstruction and Development was opened by President Truman, who drew

attention to the excellent use which had been made of the loans granted to inadequately developed countries. The Chairman, Mr. Eugene R. Black, then presented the annual report, in which he particularly stressed the substantial increase in the volume of loans made between 1948 and 1951, and the need for member countries to increase their production in order to make a larger contribution to the aid given to inadequately developed countries.

After various administrative and financial reports, the document contains the text of several resolutions adopted by the Board between its fifth and sixth annual meetings and relating chiefly to the conditions on which Burma and Sweden should be admitted to membership of the Bank. Mention is then made of a draft resolution presented to the Board of Governors by the Czechoslovak representative with a view to the exclusion of the Kuomintang representatives from the International Bank and the International Monetary Fund. This proposal was rejected on the opposition of the United States representative.

Lastly, there are a series of expert reports on the Bank's activities, a list of the decisions of the executive directors and a list of the delegates, observers, experts, etc., who attended the sixth session.

## WORLD HEALTH ORGANIZATION

*Resolutions and Decisions of the Fourth World Health Assembly* (Geneva, 7-25 May 1951). Geneva, August 1951. 49 pp. (2 Swiss frs.; 3/9; $ .50).

This booklet contains the resolutions and decisions of the Fourth World Health Assembly and the reports of the Committee on Programme, the Committee on Administration, Finance and Legal Matters, as well as the reports of the joint meetings of these two committees.

*Resolutions and Decisions.* Official Records of the World Health Organization. No. 36. Executive Board. Eigth Session. Held in Geneva from 1 to 8 June 1951. Annexes. Geneva, October 1951. 48 pp. (2 Swiss frs.; 3/9; $ .50).

After an introduction containing the results of the elections of the members and officers of the Executive Board of the World Health Organization, this volume contains the resolutions and decisions adopted at the ten meetings of the Eigth Session of the Executive Board. In addition to a number of resolutions concerning the current administration of the Organization, its programme of work and its relations with the United Nations and other international organizations, those relating to the "International Sanitary Regulations", to "Technical Assistance for Economic Development" and those concerning the sanitary organization of certain regions of the world, merit special attention. The annexes contain a variety of information of a technical, administrative and financial nature about the Organization's activities, and an alphabetical index of the resolutions contained in the present volume.

*Annual Epidemiological and Vital Statistics*, 1939-46. Part I. "Vital statistics and causes of death." Geneva, 1951, 124 pp. 16 Swiss frs.; £1; $4).

After formulating a number of reservations with respect to the value of vital statistics and more particularly with respect to comparisons between various national statistics of mortality, this volume contains a series of tables relating to the area and population of the different countries and to their rates of birth, marriage, fertility, infant mortality and mortality in general, between 1921 and 1946. A large place is given to the study of mortality and to the analysis of its causes; tables show the number of deaths resulting from certain diseases in the large towns. The annex contains an alphabetical index of contents.

*Expert Committee on Mental Health. Report on the First Session of the Alcoholism Subcommittee.* "*Technical Report*", Series No. 42. Geneva, September 1951, 24 pp. (0.60 Swiss frs.; 1/3; $ .15).

Emphasizing the importance of alcoholism as a disease and a social problem, and maintaining that public health services could make extensive contributions to its

prevention and treatment, this report of the Alcoholism Subcommittee of the World Health Organization first points out the need for a commonly accepted terminology, which is the first condition of effective international action. It also emphasizes that such action requires every country to develop its national statistics on the incidence of alcoholism. Although, at present, scientific research is not sufficiently advanced to permit the treatment of alcoholism to be regarded as a purely medical problem, it is nevertheless the public health services which should undertake the early treatment of alcoholism. For that purpose, it seems necessary to establish and develop institutions specialized in the treatment of alcoholics, and more particularly to organize dispensary services which would make it possible to detect alcoholism in its initial stages when there are better chances of curing it. These dispensaries should also be educational centres intended not only for members of the medical profession, who frequently receive inadequate training in alcoholism, but also for the whole population. The annex contains various statistical information.

## III. REGIONAL ORGANIZATIONS

### COUNCIL OF EUROPE

*Third Ordinary Session (First part), 5-15 May 1951. Documents. Working Papers.* Vol. I. "Documents 1-13"; Vol. II. "Documents 14-58". Consultative Assembly.
Presented in the order in which they were examined by the Consultative Assembly of the Council of Europe at its Third Session, held from 5 to 15 May 1951, these documents deal mainly with the reports of the various committees of the Council, and with the motions, proposals and amendments discussed during this session.

*Third Ordinary Session (First part), 5-15 May 1951. Official Report of Debates.* Vol. I. "Sittings 1 to 9"; Vol. II. "Sittings 10 to 17". Consultative Assembly.
The present publication contains the official reports of the 17 sittings (from 5 to 15 May 1951) of the Consultative Assembly of the Council of Europe. At the end of the second volume there is a list of the questions examined during these sittings.

### ORGANIZATION FOR EUROPEAN ECONOMIC CO-OPERATION

*A Second Survey prepared by the Organization for European Economic Co-operation for the Council of Europe.* November 1951. 44 pp.
OEEC's second survey examines the economic implications of the present tasks confronting its member countries. In order to guarantee individual and collective security, and develop the social welfare and economic power of Europe, a big effort will be needed. The total production of Western Europe must be increased by at least 25 per cent in the next five years. Although Europe has the necessary material and spiritual resources to succeed, joint measures will be necessary with regard to coal, steel, electricity, agriculture, housing and labour. Moreover, to meet all needs at a time when the volume of goods and services is itself restricted by the shortage of raw materials, it will be necessary to establish priorities. Europe must restrict its less essential claims and produce more with the resources at its disposal.

The present survey, which deals mainly with the problems of international trade and payments as well as with those of raw materials, notes that member countries of the Organization have still not succeeded in obtaining external balance, and that since the beginning of 1951 the position of many of them has become even more serious. This relapse in the trade position of most member countries has been due to a much sharper increase in the value of imports than of exports. A serious shortage of raw materials, due to the outbreak of war in Korea, constitutes a great danger to production. The main difficulties are caused by the shortage of coal, coke and non-ferrous metals.

The annexes contain the text of the statement published on 29 August 1951, by the representatives of the Governments of OEEC's member countries; an interim report on internal financial stability questions; and a list of OEEC's recent publications.

*Coal and European Economic Expansion.* An OEEC report. Paris, 1952, 68 pp.
Drawn up by OEEC's Special Group of Experts on Coal, this report aims at giving an idea of what the coal situation will be, during the next five years, in OEEC's member countries. The report first studies the consumption of coal by sectors and estimates that there will be a total increase of some 60,000,000 tons in the consumption of this commodity. The second chapter, which is illustrated with several statistical tables, indicates the rapid increase in the production of coke. The report then analyses (mainly from the point of view of the problems of manpower and investment) the present plans of member countries for the production of coal and forecasts the possible situation of the international coal market in 1956.

Annex III contains the text of a recommendation concerning the coal situation, adopted by OEEC's Council on 11 January 1952.

*Industrial Censuses in Western Europe.* Report of a group of experts. Paris, 1951, 69 pp.
The group of experts, instructed by OEEC to study industrial censuses in Europe, prepared this report after visiting Denmark, the Netherlands, the United Kingdom and France, as well as the governmental statistical services in these four countries and other organizations and business institutions. The report first discusses the purposes of industrial censuses and the methods used in this field in the countries visited. It then indicates the most important problems raised by the organization of an industrial census and emphasizes the need for improving the international comparability of national statistics; in conclusion, it makes a series of recommendations concerning the various points discussed.

At the end of the report a number of synoptic tables establish comparisons between the data collected in the various countries visited.

*Financial Stability and the Fight against Inflation.* An OEEC report. Paris, 1951. 99 pp.
The first part of this report contains a historical analysis of the inflationist and anti-inflationist influences as well as of the policy of the Governments of Western European and Northern American countries since the middle of 1950. It studies in particular the interaction between the pull of a high level of demand and the push of higher costs, whether internal or external. The report then considers the problems which will have to be solved in 1951 by the countries of Western Europe and North America. The defence programmes will play a much more important role in the future. As the increase n defence expenditure will exceed the national income, it will be accompanied by the risk of inflation.

This risk will be the main internal problem of most of the countries of Western Europe and North America, which will therefore be obliged to take joint or separate measures for increasing production, restricting demand and reducing the rise in costs and prices. The last part of the report, which is illustrated with some 40 diagrams and tables, discusses the economic and financial situation (past and present) of each of the Organization's member countries in turn, and the problems which each of these countries will have to solve in the future.

*A Simplified System of National Accounts.* National Accounts Research Unit, 1951. Paris, 1951. 55 pp.
In order to facilitate comparison between the economic transactions of member countries of the Organization for European Economic Co-operation, the latter's National Accounts Research Unit has established a simplified system of national accounts; these are presented in two forms in Section II of this booklet, which is illustrated with tables. The first form of presentation, which is appropriate to a comparison covering several years, consists of six tables: the first three group all the current transactions of each of the three internal sectors: industry, government and private non-profit institutions; the fourth table groups, at the national level, all transactions between the internal sectors and the rest of the world; the fifth table groups all trans-

actions in capital, and the last table gives the composition of each of the main national aggregates and their respective relationships. With regard to the second form of presentation, which is more appropriate to comparisons covering one year only, it has the advantage of indicating on a single page all the flows between the five accounts. Under the title "The Nature of the Flows", the report studies the 15 types of transactions distinguished by the simplified system of national accounts.

# INTERNATIONAL REVIEW OF PERIODICALS

## UNITED NATIONS ORGANIZATION

*General*

BENTWICH (Norman). "An Attorney-General of UNO". *Contemporary Review*. January 1952. pp. 17-20.

With the object of reinforcing the Universal Declaration of Human Rights, which in the absence of genuine sanctions is very weak, the Human Rights Commission submitted to the United Nations General Assembly of 1950 a draft resolution which clearly defined fundamental civil and political rights and liberties. In addition to that definition, the draft provided for the setting up of a Special Committee to examine Member States' complaints. No doubt, as suggested by the Uruguayan delegation, an Attorney-General, representing public interests and responsible for enquiry and conciliation procedures, should be attached to the Committee to deal with complaints by individuals.

HARLEY (G. Eugene) "Achievements of the United Nations (February 1946 to August 1951)". *World Affairs Interpreter*. Autumn 1951, pp. 280-95.

With the object of describing United Nations achievements from February 1946 to August 1951, the author begins by briefly outlining the terms of reference and functions of the United Nations organs, the Specialized Agencies and the various Commissions and Committees, and goes on succinctly to summarize the various international conflicts which occupied the UN's attention during the period under review, ending with a survey of the Organization's activities in all international fields.

KONDAPI (C.). "Indian opinion of the United Nations". *International Organization*. November 1951. pp. 709-21.

India is resolved to support the United Nations because she believes that it is capable of greater realism than the League of Nations and of making an important contribution to the maintenance of peace. Realizing, however, that the chief causes of conflict have not been eliminated, India doubts the immediate efficacy of UN. Imperialism in fact continues to dominate the world, and the Great Powers are tending to turn UN into a body in the service of their own interests.

In the absence of any better international organization, however, India has tried to ignore such criticism, and resorted to UN over the Kashmir dispute, agreeing to stand by its decisions, although she is herself the legal occupier of the territory and has an advantageous military position. In the Korean question, believing in North Korean responsibility for the aggression, in the need to localize the conflict in order that peace might be restored as quickly as possible, and in the principle of allowing the Koreans themselves to decide freely the future of their country, India voted for the Security Council resolutions of 25 and 27 June 1950.

Similarly, when India asked for Communist China's admission to UN, she was merely recognizing as a fact the outstanding event in modern history, namely Asia's awakening, and she was trying to prevent UN from being split into two hostile blocs, with all the weakness that that would entail. For similar reasons, India has refused

to subscribe to the Acheson plan to substitute the majority rule for the unanimity rule, which would tend to turn UN into an instrument in the service of a particular policy, thus clearly running counter to the objectives assigned to it.

LAZAREV (M. I.). "K voprosu o dopuščenii predstavitelej Kitajskoj Narodnoj Respubliki v Organizaciju Obedinennykh Nacij". *Izvestija Akademii Nauk S.S.S.R., Otdelenie Ekonomiki i Prava.* September-October 1951. pp. 325-39. (The question of the admission of the Representatives of the Chinese Peoples' Republic to the United Nations Organization.)

The writer considers that the proclamation on 1 October 1949 of the Chinese Peoples' Republic constituted a striking victory for peace and progress. The continual efforts of the Americans had not in any way detracted from that victory, although they had followed the same procedure towards China as towards the Soviet Union, and have obstinately refused to recognize the State created by the will of the Chinese people and to grant that State access to the United Nations, even though it is entitled to such access under every principle of international law. According to principles enunciated by American lawyers and statesmen themselves throughout history, it is absurd, the writer argues, to refuse recognition to a State which has all the attributes of sovereignty. It is ridiculous to deprive one-quarter of the world's population of representation in the United Nations while the Dominican Republic, with its two million inhabitants, has a voice there on a par with the most important States. This policy of boycott and sabotage is but a corollary to American aggression against China, both in Formosa and Korea.

MALIK (Charles). "Human Rights in the United Nations". *International Journal.* Autumn 1951. pp. 275-80.

In an attempt to assess the value of the Universal Declaration of Human Rights, the author notes that the fundamental nature of its provisions implies that they are subordinate to the legislation of individual signatory States. The Declaration, which assigns equal importance to economic and social, and to civil and political rights, also marks an advance on earlier texts such as Magna Carta or the American and French Declarations. Yet despite the undoubted positive value of the Universal Declaration, the individual's basic rights are still gravely threatened, either by a materialist conception of the Universe, or by its conception of Man as the be-all and end-all.

SPIROPOULOS (J.). "Formulation of the Nuremberg principles". *Revue hellénique de droit international.* April-June 1951. pp. 129-62.

By way of introduction to this analytical study of the Nuremberg principles, the author examines in detail the Tribunal's legal bases and the texts which define its authority. He notes in particular that, by defining the chief war crimes and crimes of aggression, the Tribunal's judgments acquired a legal value in excess of their purely historical interest. The United Nations Organization and the International Law Commission have incidentally also made a considerable contribution to the foundation of International Law.

The main principles thus set out are certainly derived from a new concept of Law. This applies in particular to the principle of criminal responsibility for crimes against International Law, to the principle that the author of an act considered to be an international crime is not relieved of responsibility therefore by the fact that it was not punishable under his national law, and to the principle that a crime committed nationally in the performance of official duties does not confer exemption from responsibility under international criminal law.

All these principles amount to so many attacks on the dogma of national sovereignty at its most absolute. International Law may possibly help to give them greater positive value.

"Islam in the United Nations. A Union of Mutual Regard". *The Round Table.* December 1951. pp. 30-66.

No doubt the reason why the Islamic bloc does not play as important a part in the United Nations as might be expected is that certain Arab countries have not joined the

Organization, and that many of those that have pursue too personal a policy. At the same time, the Arab bloc's cohesion and its solidarity towards the United Nations are conditioned by a number of factors. Apart from the fact that all the Arab countries share the same type of civilization, they all, without exception, adhere to certain underlying United Nations principles, such as the peoples' right to decide their own fate or the equality of big and small nations before the law. The presence in the United Nations of the United States, which guarantees respect for those principles, inevitably strengthens those countries' faith in such principles, despite the fact that their desire to remain neutral in the cold war and their attitude towards the Zionist Movement cause serious friction between the United States and themselves.

*The Economic and Social Council*

GAVRILOV (S.). "Ekonomičeskij i Socialnyj sovet O.O.N. na službe amerikanovikh agressorov". *Professional'nye Sojuzy*. November 1951. pp. 45-50. (The UN Economic and Social Council in the Service of American aggression.)

The writer considers that, according to the United Nations Charter, the Economic and Social Council should help to solve international problems and to enforce recognition of human rights and fundamental freedoms. The Geneva session had once again shown that the Council had become no more than a branch of the American State Department. An automatic majority in the service of Anglo-American interests systematically rejected every proposal by the delegates of the Soviet Union and the People's Democracies for the improvement of the conditions of workers in the capitalist and the under-developed countries. At a time when the standard of living of the working masses was seriously threatened by the armaments race started by the United States and its satellites, the Council had refused to listen to the suggestions for the reduction of military budgets made by the World Federation of Trade Unions. Such resolutions as were finally voted on the initiative of the American representatives were pure hypocrisy, vainly endeavouring to conceal the destructive effects on the international community of American policy.

LAUGIER (Henri). "Pour une réforme du conseil économique et social". *Politique étrangère*. 4-5 December 1951, pp. 313-24.

After paying tribute to the scope and nobility of the United Nation's task, especially its efforts for the improvement of the living conditions of the peoples, the writer refers to the five years' experience of the work of the Economic and Social Council, and proposes that body's reform. He deplores the fact that shortage of time—the Economic and Social Council meets in plenary session only twice a year—and of financial means have often obliged the Council to confine itself to sterile discussions, and somewhat to neglect its task of consultation with non-governmental bodies and of co-ordinating the work of the UN Specialized Agencies. It has also failed to assume responsibility or decisions, relying for the purpose either on other bodies, or passing to its committees the study of certain problems without sanctioning the results by a vote. The writer would like the Council to become permanent and to have increased funds at its disposal, and he contemplates the possibility of structural reform without which it cannot satisfactorily fulfil its task.

V. D. B. "Le travail forcé comme système économique". *Labor*. November 1951. pp. 145-48.

After recounting the history of the setting up by the United Nations Economic and Social Council of the *ad hoc* Committee on Forced Labour, the writer gives an account of the Committee's first meeting in Geneva on 8 October 1951. On that occasion a number of its members were able to prove from the texts of Soviet laws and regulations that there exist in the U.S.S.R. and its satellite countries types of forced labour, of which a characteristic exemple is internment in a "Re-education camp" imposed by an administrative order.

ABELIN (Pierre). "A la recherche d'un équilibre mondial: L'assistance technique". *Politique étrangère*. December 1951, pp. 325-38.

If they wish to remove the threat to international peace due to the existence of exceedingly low standards of living, it is well worth the while for the better-developed countries to raise the standard of the economically backward countries to their own level. That was the principal reason why, in 1949, the United Nations Economic and Social Council extended its action and invited all its Member States to participate in the programme which has since become known as the Expanded Programme of Technical Assistance. Its resources are divided between UN and the Specialized Agencies, co-ordination between them being ensured by the Technical Assistance Board (TAB), while Member States themselves control implementation of the programme through the Technical Assistance Committee (TAC). The aims of assistance are clearly defined and limited, in accordance with the funds available, to exploratory missions, the award of study fellowships and the setting up of technical training and study centres. The programme provides for the introduction of the personnel of national organizations to modern techniques which aim at raising the standard or living, while the study missions merely prepare modernization projects which governments are free to apply as they wish. This type of assistance is intended to supplement national plans and the activities of certain bodies such as the Bretton-Woods International Bank. In conclusion, the author points out that the non-self-governing territories should be allowed to receive assistance under the Technical Assistance Programme, that the machinery of allocation should be less automatic, and that the study fellowships scheme should be expanded.

APICELLA (Vincenzo). "La funzione degli investimenti pubblici per lo sviluppo delle aree depresse". *La Comunità Internazionale*. October 1951, pp. 633-41.

Point IV was supposed to solve the problem of investment in underdeveloped countries by applying a logical programme, aimed at re-establishing a seriously imperilled equilibrium. Two recent official American reports (the "Gray Report" and "Partners in Progress") have revealed in greater detail the present concept of foreign investment. Contrary to the underlying idea of Point IV, American investment is now supposed to be directed to immediately productive activities—thus eliminating any international planning—and to receive very extensive guarantees, regardless of the interest of the beneficiary countries. In practice, the elimination by the governments of the countries concerned of all control, whether restrictive or not, on exchanges and capital movements would lead, not to the economic development of the under-developed countries, but to a return to the colonial type of investment. Under these conditions, the usefulness of private American capital to the economic development of those countries remains strictly limited. Moreover, the experience of the last five years shows that, far from restoring the United States balance of trade, investment has merely upset it still further. Thus it would seem that only investments in the form of gifts or long-term governmental loans, which can be effectively controlled by the recipient governments, can restore that balance.

BLELLOCH (David). "Technical Assistance. Programmes and Policies". *International Affairs*. January 1952, pp. 49-58.

It is estimated that at the present time nearly two-thirds of the world's population outside the Soviet orbit are concentrated in underdeveloped countries, that is to say in areas in which the population's standard or living is below the bare minimum. At a time when the need for world unity is becoming increasingly apparent, it is intolerable that well-being should be the preserve of a small part of the world's population.

A few general principles can be derived from the plan for technical assistance to the underdeveloped countries, itself evolved from the Truman Plan and probably the most serious attempt ever made to develop those regions. In the first place, it would seem that a united and sufficiently broadly-based programme of co-operation can yield appreciable results, while any more limited effort is bound to fail. As regards the

programme's orientation, it is evident that a choice must be made. While it is essential that, wherever possible, the raw materials needed by the industrialized countries should be extracted and their output expanded, it must not be forgotten that the welfare and development of the populations of the underdeveloped regions depend entirely on a balanced economy. Another important condition for the effectiveness of technical assistance is that its application shall be varied to suit each recipient country. As for the funds for financing the programme results will of course be closely related to the effort put forth by those who apply it.

FOWKE (V. C.). "Progress, Poverty and Inter-Regional Disequilibrium". *The Canadian Journal of Economics and Political Science*. November 1951, pp. 501-14.

The various plans for assistance to underdeveloped countries have been received with wild enthusiasm in certain countries, whereas others, such as the U.S.S.R., which see in them only a disguised imperialism, have remained aloof and indifferent. A historical study of this basic inequality in the position of the different countries shows that, from the sixteenth century onwards, Western Europe, with England and the Netherlands in the lead, was able to make contact with, and to dominate economically backward countries, since the conquest of new markets guaranteed economic progress for the mother countries.

In the twentieth century, the old metropolitan territories have yielded their titles of Great Powers to Russia and the United States, while the struggle of the underdeveloped countries for independence and their resultant nationalism tended to modify the old political climate. While in the nineteenth century the profit motive was the determining factor in those regions' progress, it was gradually ousted by international generosity and understanding, even where they were the outcome of ulterior motives such as the wish to oppose the spread of Communism and to achieve full employment in the industrialized countries. A rise in the standard of living of the underdeveloped peoples still seems to be hampered chiefly by outmoded social structures and present-day demographic pressures.

KEENLEYSIDE (Hugh L.). "Technical Assistance—Tool for World Evolution". *International House Quarterly*. Autumn 1951, pp. 213-19.

After recalling that the aim of the Expanded Programme of Technical Assistance is to raise the standard of living of two-thirds of mankind, the author points out that that programme is merely the realization of an old dream under a new name. Developing that idea, he studies the evolution of Technical Assistance since its creation was envisaged by the signatories of the San Francisco Charter, and examines its administrative organization and some of the ways of financing it. As a demonstration of the variety and scale of assistance needs, he rapidly analyses some requests for assistance that are on the point of being satisfied or are under study, and emphasizes in conclusion that "Point Four" is wholly in keeping with the social and humanitarian aims of the United Nations Charter.

MARSAN (Veniero Ajmone). "Il progresso economico dei territori in amministrazione fiducieria". *La Comunità Internazionale*. October 1951, pp. 622-32.

This report, which was submitted to the Economic Commission of the Sixth Plenary Assembly of the World Federation of United Nations Associations (Stockholm, 24-31 August 1951) by the Italian Society for International Organization, analyses the available information on the economic condition of the trusteeship territories in Africa and the Pacific. In general, the economic progress of those territories is very slow, owing mainly to increasing populations, to very low agricultural productivity, and to the fact that foreign capital is invested only in a few local sources of wealth and exported in the form of raw material. The revenue of the native populations could be increased only by making the production of those territories more varied. Admittedly, some of the territories are too small to constitute a self-governing and workable economy, so that a sound economy could be established only on an economio-administrative union with neighbouring territories. In any case, the various United Nations Associations could reinforce the action of the United Nations to improve the economic position of the trusteeship territories.

RICARD (Romain). "De quelques aspects juridiques des problèmes de l'assistance technique aux pays insuffisamment développés". *Penant*. September-October 1951 and November 1951, pp. 79-88 and 89-102.

In the underdeveloped countries, the Expanded Programme of Technical Assistance involves an extension of State powers which the United Nations and the Specialized Agencies must counteract by helping those countries to solve the legal problems arising out of their economic and social development.

The writer first considers general legal problems, and studies the effects on the Law of those countries of expert missions, conferences and the communication of information to their governments by international organizations. He goes on to consider legal organization in detail, explaining the position of every branch of law in relation to Technical Assistance. The writer is particularly interested in the systems obtaining with regard to personal property and real estate, in the problem of transport and communications, and in the status of individuals and corporate bodies. After dealing at some length and in connexion with the status of individuals, with the activities of international institutions on behalf of workers, migrants, women, children, the undernourished and the sick, the writer points out in conclusion that international co-operation in the work of assistance to underdeveloped countries provides a most encouraging field for legislation, which is being progressively influenced by sociology.

*The International Court of Justice*

BARCIA TRELLES (Camilo). "El derecho de asilo diplomatico y el caso Haya de la Torre". *Rivista Española de Derecho Internacional*. 1950, Vol. III, No. 3, pp. 753-801.

Account of the lawsuit between Colombia and Peru in the matter of the asylum granted by the former to Haya de la Torre, and very detailed legal analysis of the judgment given by the International Court of Justice. Apart from detailed criticism of the legal procedure, the writer reproaches the Court, most of whose members were not American lawyers, with having misunderstood the peculiarities of the New World's traditions, laws, customs and Conventional Law, so that, in its judgment, it misinterpreted certain specifically American problems. The mistakes which were made can be explained by the differences in the legal evolution of Europe and America.

JULLY (Laurent). "L'asile diplomatique devant la Cour Internationale de Justice" *Die Friedens-Warte*. 1951, No. 1, pp. 20-58.

The writer shows the three phases of the procedure followed in the Haya de la Torre case, in which Colombia and Peru appeared before the International Court of Justice in the matter of the asylum granted by a Colombian Embassy to a Peruvian citizen.

In the first phase, Peru based itself on the Bolivarian Act of 1911 and the Montevideo Convention of 1933, while Colombia based itself on the Convention signed at Havana in 1928. Certain general and abstract questions, relating principally to the nature of the right of asylum and the status of the conventions governing it, were settled by the judgment of 20 November 1950. The second and much shorter phase, in which Colombia requested an interpretation of the judgment, terminated in the judgment of 27 November 1950, declaring that request to be inadmissible. The third phase, arising out of a Colombian request that the Court should make clear the respective obligation of the parties and the procedure for applying the first judgment, ended with the judgment of 13 June 1951, whereby the International Court confirmed its finding and refused to lay down the procedure for application of its judgment.

While regretting that the Court was unable to settle the dispute, the writer concludes that it might have been preferable to submit the case to an arbitrator who could have given a fair award.

*The International Labour Office*

"La dernière conférence de l'O.I.T. a traité de l'égalité de rémunération, de la sécurité sociale et des relations industrielles". *La Gazette du Travail.* October 1951. pp. 1308-21.
The article summarizes the work of the Thirty-fourth Session of the International Labour Conference held in Geneva from 6 to 29 June 1951, reporting the speeches of the Canadian delegation on each question studied, and showing how the delegation voted.

After giving an account of the voting on the admission of new Member States, and of the Director-General's report, the article deals with the most controversial of all the questions on the agenda, namely the problem of equal remuneration for men and women workers for work of equal value. It sets down the arguments on each side, and the procedure for the application of the proposed convention.

The article goes on to deal in particular with the discussion on a draft proposal on Social Security, with recommendations on various aspects of labour relations, and with a convention on methods of fixing minimum agricultural wages.

The texts of the conventions and recommendations adopted at the Thirty-fourth Session of the International Labour Conference are given in the annex.

"La 34e session de la Conférence internationale du travail (juin 1951)". *Revue française du travail,* July-August-September 1951. pp. 458-67.
The article summarizes the principal provisions of the convention and recommendation on equal remuneration for men and women workers for work of equal value, adopted at the thirty-fourth session of the International Labour Conference. The emphasis is on the procedure for the application of the principles in question.

The text of the convention and recommendation is given in the annex.

"International Labour Organization. The 117th Session of the Governing Body". *Industry and Labour,* ILO. 1 January 1952. p. 2-21.
After recording Japan's admission to membership of the Organization and examining the procedure to be followed in implementing the resolutions adopted at the thirty-fourth Session of the International Labour Conference, the ILO's Governing Body dealt chiefly with the employment of domestic workers and with the conditions of work and life of boatmen in Asia. It then took note of the results of the Conference on Migration and of the work of the various Industrial Commissions, and studied a certain number of special problems, including payment by results and productivity, questions of agriculture and agricultural reform, freedom of association, and lastly, the life of Egyptian workers in the Suez Canal zone.

*The United Nations Food and Agriculture Organization*

IORDANSKI (V.). "Quels intérêts sert la F.A.O. ?" *Temps nouveaux.* 10 October 1951. pp. 10-13.
After showing the importance of the functions assigned to the United Nations Food and Agriculture Organization on its establishment six years ago, the writer claims that, instead of actively pursuing a policy which would meet the great needs of the underdeveloped and over-populated countries of South East Asia, the Organization has merely published gloomy statements. According to the writer, it has become a mere section of the American State Department, and—to mention only his principal grievances—has confined itself to maintaining the level of agricultural prices for the sole benefit of North America, to providing supplies for the expeditionary forces in Korea, and to facilitating political intervention by the United States in the guise of economic aid. It is this pro-capitalist attitude which explains why the U.S.S.R. has never been prepared to take part in the Organization's activities, and why the Peoples, Democracies have in turn all broken with it.

"L'Unesco en action". *Cahiers d'action religieuse et sociale.* 1 January 1952. p. 17-24.
This general survey of Unesco's achievements shows their scope and main trends.

In the field of education, Unesco pays particular attention to the training of young people, in particular to the training of maladjusted children and war-victims, to the social life of young people (children's communities, clubs for international relations, international work camps), to the training of educators, to international study seminars, to the education of workers and to "fundamental education", which is specially adapted to the under-developed countries.

In view of its function as a clearing-house for information, Unesco tries above all to guarantee equal access to culture for all, to ensure the free flow of ideas and works by means of the international coupon scheme or by exemption from custom dues, and to draw up a kind of inventory of intellectual output. Lastly, in order to ensure the progress of mankind, Unesco, acting as a social study centre, endeavours to promote close intellectual co-operation, to establish relationships between the international scientific and cultural organizations, and to protect scientists, artists and men and women of outstanding ability in the professional field.

BREUER (Edmond). "Die 14. Internationale Erziehungskonferenz als Beitrag zur Friedenssicherung". *Die Friedens-Warte.* 1951. No. 1. pp. 73-9. (The Fifteenth International Conference on Public Education as a contribution to peace.)
The Conference, which was held in Geneva from 12 to 21 July 1951 under the joint auspices of Unesco and the International Bureau of Education, was held for the purpose of examining the relationship between intellectual training, education and the endeavours made for the preservation of peace. As a result of the Conference's discussions and reports, of which the main subjects were compulsory education and its prolongation, and school meals, the general principles of the Unesco/IBE "general peace strategy" were laid down. That strategy aims not merely at action on a formal (or legal) plane, but at securing peace by reducing international tensions. Consequently its approach is psychological and intellectual, and is divorced from economics or even morals, being based on the idea that it is more important to prepare for a peace of the future than to safeguard the present peace. Lastly, the Conference gave priority to problems arising out of the education of "primitive" peoples, a decision which is open to discussion according to the writer, in whose opinion future conferences should give priority to the consideration of immediate economic measures and research into the causes of war among "civilized" peoples.

JOUVE (Alain). "Qu'est-ce que l'éducation de base?" *La nouvelle critique.* November 1951. pp. 35-45.
Unesco endeavours to overcome the misery which pervades the capitalist world by Fundamental Education and technical assistance to underdeveloped countries. The writer studies Unesco's fundamental education programme in the light of a large number of quotations, and tries to show that, gradually abandoning its initial definition, whereby it was supposed to provide a foundation for the democratic life of the peoples, fundamental education is more and more developing into a mere technique for increasing the value of the territories concerned by the old colonial methods, and for disseminating the traditional principles of American capitalism.

RADVANYI (Laszlo). "Measurement of the effectiveness of basic education". *International Journal of Opinion and Attitude Research.* Autumn 1951. pp. 347-66.
This analysis of the results of Unesco's pilot project for the application of fundamental education to the rural population of the Santiago Valley (Nayarit, Mexico) is introduced by a statement of method, in which, in discussing the relative advantages of sample polls by questionnaire and of direct observation methods, the writer gives preference to the former—according to him, the only method for obtaining numerical data which lend themselves to generalization.

The Santiago Valley survey, which uses this method, has mainly endeavoured to

define the basic characteristics of the population concerned, it has followed the evolution of those characteristics year by year, determining with the utmost accuracy the changes resulting from the educational programme. The questionnaire and the sampling method, which covered the very high proportion of five per cent of the populations could be established only after a geographical, economic and social study.

A short review of the survey's conclusions shows the reader that Unesco's pilot project has already given very appreciable results.

*The International Trade Organization*

"Les travaux de la 6e session de l'Organisation Internationale du Commerce à Genève". *Bulletin du Conseil National du Patronat Français*. 20 November-5 December 1951. pp. 16-18.

The Bulletin, which deals only with the most important questions on the agenda of the Sixth Session of the International Trade Organization, begins with an account of two proposals submitted by the Benelux countries and France respectively, with a view to reducing the disparities in European customs tariffs and gradually lowering them. The Bulletin goes on to analyse the various draft conventions and recommendations, in particular those relating to the importation of commercial samples and material for publicity, and to the abolition of consular invoices. The International Trade Organization dealt lastly with the application of its General Agreement, recording the rupture of the obligations between Czechoslovakia and the United States under that agreement, and it examined various infringements of the agreement, in particular the institution of a purchase tax by the United Kingdom and United States restrictions on the importation of dairy produce.

# PART V

# OPEN FORUM

# THE SECOND WORLD CONGRESS OF SOCIOLOGY

The Second World Congress of Sociology will be organized by the International Sociological Association under the auspices of Unesco at Liège, Belgium, from 24 August to 1 September 1953.

Sociologists of all countries of the world, professors, research workers and students, are cordially invited to take part in this Congress and are asked to enter into contact with the ISA Secretariat for registration and detailed information.

The Congress will be centred on the presentation and discussion of papers in two main fields: (a) Social Stratification and Social Mobility, and (b) Mediation of Intergroup Conflict. It will also include important discussions of Recent Developments in Sociological Research and of the problems relating to the Training and Professional Activities of Sociologists.

The section on Social Stratification and Social Mobility will be based on a number of surveys of existing knowledge and current research to be prepared by participants in the ISA programme of cross-national enquiries into stratification and mobility, and will focus on theoretical, methodological and practical problems raised by the planning and implementation of comparative research on social status and social structure.

The section on Mediation of Intergroup Conflict will be based on papers dealing with methods of adjusting intergroup conflict and will seek to advance knowledge concerning mediation, conciliation, and the furtherance of intergroup co-operation by bringing together reports on research and case studies analysing factors making for success or failure in efforts to deal with conflict situations in various aspects of social life—international relations, industrial relations, race relations, and other important areas in which social science knowledge has been brought to bear upon problems of minimizing and resolving intergroup conflict and misunderstanding.

There will also be a general section for discussions of Recent Developments in Sociological Research. This section will be devoted to the discussion of a series of reports on sociological research enterprises launched since World War II. Sociologists interested in presenting reports for this section should enter into contact with their national associations or directly with the ISA Secretariat and should be prepared to have their final manuscripts ready by 1 February 1953, in order to allow sufficient time for crutiny by general rapporteurs and for translation, duplication and distribution by the Secretariat.

Finally, a section of the Congress will be devoted to the discussion of problems relating to the Training and Professional Activities of Sociologists and will be based on the general report, the national surveys and other papers to be prepared within the framework of the Inquiry into the Teaching of Sociology and Related Disciplines undertaken by the International Sociological Association at the request and with the support of Unesco.

All papers and reports to be prepared for the Congress will be duplicated and distributed in advance and will be presented by general rapporteurs to be followed by prepared discussion on each section or sub-section.

The basic registration fee for participants will be $3 or its equivalent in pounds sterling, Belgian francs, French francs or Norwegian kroner. This fee will cover admission to Congress meetings and participation in social functions and will ensure receipt of all papers and reports pertaining to at least one of the sections of the Congress. Participants wishing to obtain copies of papers and reports pertaining to sections other

than the one to be covered by the basic fee will be able to obtain these at the cost of $2 or its equivalent for each section.

Local arrangements in Belgium will be taken care of by an Organization Committee to be set up by Professor René Clemens of the University of Liège. The Secretariat of this Committee will, from September 1952 onwards, be able to provide any information required on local accommodation and other facilities. General information on Congress preparations, and particularly on the registration of participants and the presentation of papers for the Congress, will continue to be provided by the Secretariat of the International Sociological Association, Grev Wedelspl. 4, Oslo.

# THE INTERNATIONAL CONGRESS OF ANTHROPOLOGICAL AND ETHNOLOGICAL SCIENCES

Fourth Session, 1-8 September 1952, Vienna (Austria)

The Fourth International Congress of Anthropological and Ethnological Sciences, to be held in Vienna from 1 to 8 September 1952, promises to be an important scientific event.

Eight hundred and fifty people have announced their intention of taking part as members in the Congress's work, and 300 as associate members. Fifty-three different countries will be represented, including 21 in Europe, 10 in America, several African and Asian countries, Australia and New Zealand. A large number of universities, academies, museums and scientific associations throughout the world are also to send delegates.

In the ordinary way, the papers delivered must not last longer than 20 minutes; allowance has been made for each paper to be followed by 10 minutes' discussion.

Speakers may use English, French, German, Italian or Spanish.

The programme of the Congress includes, in addition to the usual anthropological and ethnological subjects, questions connected with applied ethnology, demography, sociology, religious studies, ethnic psychology, linguistics, folklore, prehistoric studies, palaeo-ethnology, and the domestication and cultivation of plants.

It is also proposed that a detailed discussion shall be held, with the object of determining what is the most urgent work to be undertaken for the preservation of scientific records bearing on cultures and languages which are in imminent danger of extinction.

Notification has already been received of a number of papers on a wide range of extremely interesting subjects.

The fee for admission to the Congress is 200 Austrian schillings ($8), and it entitles participants to receive the records of its work. Each member is also at liberty to enter one or two members of his family as associate members of the Congress, on payment of 100 Austrian schillings ($4) for each person so entered. Associate members will be allowed to attend meetings and receptions and to take part in excursions, but will not be entitled to speak or vote at discussions, and will not receive the records of the proceedings.

The Organizing Committee is prepared, on request, to arrange accommodation for those attending the Congress.

All enquiries about the Congress should be addressed to the Secretary-General, Wilhelm Koppers, Institut für Völkerkunde, Neue Hofburg, Corps de Logis, Vienna I, Austria.

# BOOKS RECEIVED

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